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UNITED STATES DEPARTMENT OF AGRICULTURE
 Rural Electrification Administration
 Technical Standards Committee "A"
 (Electric)

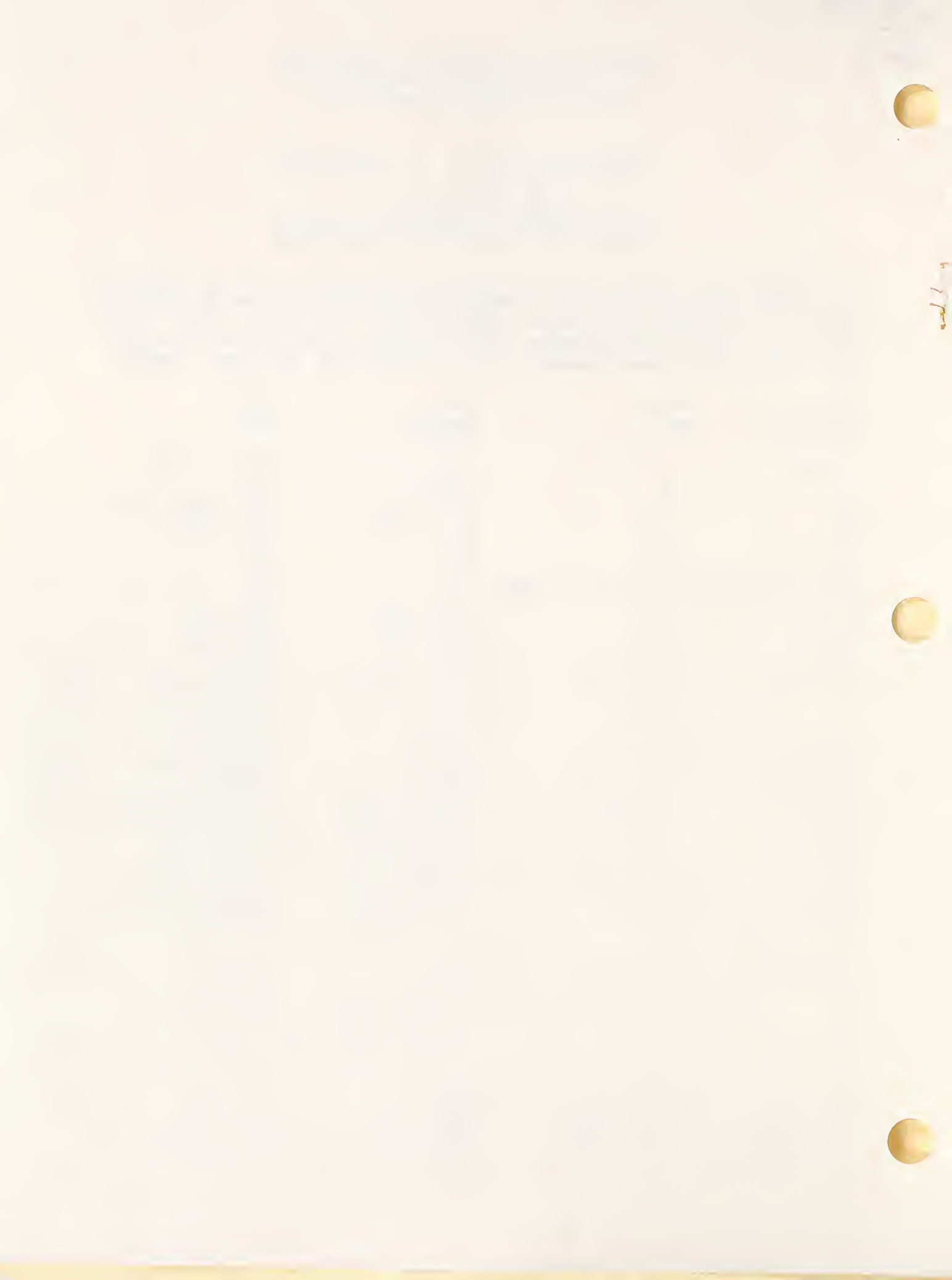
Combined Supplement No. 2, January 1985
 and Supplement No. 3, April 1985, to
 REA Bulletin 43-5

LIST OF MATERIALS ACCEPTABLE FOR USE ON
 SYSTEMS OF REA ELECTRIFICATION BORROWERS

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of October 1984, through March 1985. The following changes should be made in order to keep it up to date. Pages with a comma between are on the same sheet, both being changed.

<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>	<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>
a-1, a-2	a-1, a-2	eq(2.2) Cond.	eq(2.2) Cond.
b	b	fm, fn	fm, fn
d	d	fv(1) Cond., ga-1	fv(1) Cond., ga-1
g-1	g-1	ga-2, ga-3	ga-2, ga-3
k-1	k-1	ga-4	ga-4
k-2	k-2	sd	sd
k(3), k(3.1) Cond.	k(3), k(3.1) Cond.	se	se
n, o	n, o	zz-1, zz-2	zz-1, zz-2
p-3	p-3	zz-3, zz-4	zz-3, zz-4
p-6	p-6	zz-5, zz-6	zz-5, zz-6
p-9, p-10	p-9, p-10	-	zz-7
v	v	U ae(1) Cond.	U ae(1) Cond.
w	w	U an-1.2	U an-1.2
y-1	y-1	-	U an(3) Cond.
y-2, y-3,	y-2, y-3	U fz-1	U fz-1
z-1	z-1	U gn(1) Cond.	U gn(1) Cond.
ae(2) Cond.	ae(2) Cond.	U gp-1	U gp-1
ag Cond.	ag Cond.	U hb(1.2) Cond.	U hb(1.2) Cond.
ap-1	ap-1	U hb(2) Cond.	U hb(2) Cond.
at-2	at-2	U he(1) Cond.	U he(1) Cond.
av-1, av-2	av-1, av-2	U he(2) Cond.	U he(2) Cond.
bn	bn	U he(3.1) Cond.	U he(3.1) Cond.
bv, bx	bv, bx	U hp(5) Cond.	U hp(5) Cond.
		U hr, U hv-1	U hr, U hv-1
by	by		
bz Cond.	bz Cond.	U hv-2	U hv-2
cg-5	cg-5	U hv-5	U hv-5
cs	cs	U hv(1) Cond.	U hv(1) Cond.
cu	cu	U hy(1) Cond.	U hy(1) Cond.
cy-1	cy-1	-	U sd
-	dd	U si-1, U si-2	U si-1, U si-2
dp	dp	GP-1	GP-1
du(1) Cond.	du(1) Cond.	GP-2, GP-3	GP-2, GP-3
eq(1) Cond.	eq(1) Cond.	GP-2, GP-3	GP-2, GP-3
eq(2) Cond.	eq(2) Cond.	GP-4, GP-5	GP-4, GP-5

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a - Insulator, pin type

Specifications

5 kV - used on 2.4 kV and
4.16/2.4 kV systems



	Plain	Radio- freed
ANSI Class 55-2		
Flashover, dry	50 kV	45 kV
Flashover, wet	25 kV	25 kV
Leakage distance	5 in.	5 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1302*
**McGraw-Edison	NP8D8*
Porcelain Products (Knox)	253
Victor Insulators, Inc.	8

12.5/7.2 kV - used on 12.5/7.2
and 13.2/7.62 kV systems



	Plain	Radio- freed
ANSI Class 55-3		
Flashover, dry	65 kV	55 kV
Flashover, wet	35 kV	30 kV
Leakage distance	7 in.	7 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1303*
Joslyn (Pinco)	L63R*
McGraw-Edison	NP9D8*
Porcelain Products (Knox)	261-S*
Victor Insulators, Inc.	5*

15 kV - used on 12.5/7.2
and 13.2/7.62 kV systems where
greater insulation is needed



	Plain	Radio- freed
ANSI Class 55-4		
Flashover, dry	70 kV	65 kV
Flashover, wet	40 kV	35 kV
Leakage distance	9 in.	9 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1304*
Joslyn (Pinco)	L2064R*
McGraw-Edison	NP21D8*
Porcelain Products (Knox)	366-S*
Victor Insulators, Inc.	6*

*Radio-freed

**Available in white as indication of neutral. White insulators are non-radio-freed.

Radio-freed and non-radio-freed insulators made by these manufacturers and in these styles are acceptable.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

a - Insulator, pin type
(Radio-freed)

Specifications

Used on 24.9/14.4 kV
distribution lines.

Radio noise free, metal
thimble



ANSI Class 56-1

Flashover, dry 95 kV
Flashover, wet 60 kV
Leakage distance 13 in.
Pinhole diameter 1-3/8 in.

Chance	C906-1311
Joslyn (Pinco)	L1123-R
Porcelain Products (Knox)	2027-S
Victor Insulators, Inc.	127-R

Used on 33 - 34.5 kV
transmission lines.

Metal thimble



ANSI Class 56-3

Flashover, dry 125 kV
Flashover, wet 80 kV
Leakage distance 21 in.
Pinhole diameter 1-3/8 in.

Chance	C906-1303
Joslyn (Pinco)	L75-R
Porcelain Products (Knox)	2045-S
Victor Insulators, Inc.	245-R

Used on 44 - 46 kV
transmission lines.

Metal thimble



ANSI Class 56-4

Flashover, dry-wet 140-95 kV
Leakage distance 27 in.
Pinhole diameter 1-3/8 in.

Victor Insulators, Inc.	225-R
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NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

a - Insulators, pin type
(Radio-freed)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*Chance C906-1321 24.9/14.4 kV ANSI Class 56-1	1274 2/9/84	To obtain experience.
*McGraw-Edison NP2T8 24.9/14.4 kV ANSI Class 56-1	1205 2/5/81	To obtain experience.
*Victor Insulators, Inc. 27R 24.9/14.4 kV ANSI Class 56-1	1235 5/27/82	To obtain experience.

*Does not have metal thimble.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

b
April 1985

b - Pin, pole top, steel

DISTRIBUTION

	<u>12.5/7.2 or 13.2/7.62 kV</u>	<u>24.9/14.4 kV</u>
Pin length, inches :	20	20
Thread diameter, inches:	1	1-3/8
Hole spacing, inches :	8	8
REA Specifications :	D-3	DT-3
Chance	2199	2195
Dixie	D-2172	D2195
Joslyn	J740	J720
Kortick		K8086
McGraw-Edison	DP19P6	DP19P5
Utilities Service	36606F-REA	36652

Pins listed below have 4-1/2" offset
which eliminates the use of Item cs

Chance	C206-0271
Joslyn	J25179
McGraw-Edison	DP28P1
Utilities Service	36549

TRANSMISSION

Pin Length, inches :	24
Thread diameter, inches :	1-3/8
Hole spacing, inches :	8
REA Specifications :	DT-3
Chance	2196
Joslyn	J824
Kortick	K8087
McGraw-Edison	DP19P8
Utilities Service	36653F

NOTE 1. Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

2. Flared type pins may be mounted with either side against the pole.

c - Bolt, machine

Applicable Specification: ANSI C135.1, "Standards for Galvanized Steel Bolts and Nuts," except that the lengths are in the ranges given below.

Applicable Sizes : 1/2 inch diameter, 6 through 10 inch length
5/8 inch diameter, 6 through 24 inch length
3/4 inch diameter, 6 through 26 inch length
7/8 inch diameter, 6 through 28 inch length

The following manufacturers have shown compliance with the applicable specifications for machine bolts:

A. B. Chance Company
Dixie Electrical Manufacturing Company
Hughes Brothers
*Joslyn Manufacturing Company
Kortick Manufacturing Company
*McGraw-Edison
*Portland Bolt & Manufacturing Company
Steel City Bolt & Screw Co., Inc.
Utilities Service Company



*"Static proof" design available.

d
April 1985

d - Washers
Flat Steel

Size, inches:	2-1/4x2-1/4	3 x 3	4 x 4	4 x 4	1-3/8 round	1-3/4 round
Thickness, in.:	3/16	1/4	3/16	1/2	12 gauge	10 gauge
Hole Diam., in.	13/16	13/16	13/16	13/16	9/16	11/16
C & C Spacer	4					
Chance	6814	6817	6818	6819-1/2	6803	6805
Dixie	D6814	D6817	D6818	D6819-1/2	D6803	-
Hughes	SW2-70	SW3-70	SW4-70	SW4-70(1/2)	RW1-3/8-50	-
Joslyn	J1076	J22596	J1080	J1473	J1086	-
Kortick	K1553	K1555	K1557	K1559-1/2	K1524	K1525
McGraw-Edison	DF2W5	DF2W7	DF2W10	DF2W15	DF1W2	DF1W3
Power Line Hardware	SWF225A	SWF33B	SWF44A	-	-	-
Utilities Service	5485	5487A	5488	5490A	5478	5479

Size, inches:	2-1/4x2-1/4	3 x 3	3 x 4	4 x 4	3 round
Thickness, in.:	1/4	5/16	7/16	1/2	3/16
Hole Diam., in.:	11/16	11/16	15/16	13/16	13/16 (spurred)
Barron Bethea (Nodular Iron)	GCW-1A* BB-214	GCW-31*	CRW-4A*	GCW-41*	-
Bethea Metals (Aluminum Alloy)	AWC-22-5*	AWC-33-5*	AWC-34-7*	AWC-44-6*	-
Bethea Hardware (Aluminum Alloy)	-	WC-33-5*	WC-34-7*	WC-44-6*	-
Continental (Nodular Iron)	-	CW-33-5*	CW-34-7*	CW-44-6*	TCSF-30-6
Flagg (MIF) (Malleable Iron)	P141* P56A	P143*	P120*	P144*	PX159A
Joslyn (Steel)	-	J114*	-	-	-
Power Line Hardware	-	CSW-33*	CRW-34*	CSW-44*	-
Universal Electric (Aluminum Alloy)	UW-225*	UW-335*	UW-347*	UW-446*	-

*Curved

g - Crossarms

Applicable Specification: REA Specification DT-5B: PE-16 for Wood Crossarms (Solid and Laminated), Transmission Timbers and Pole Keys

Crossarm Manufacturing and Treating

Firms listed below have acceptable facilities for manufacture and treatment of crossarms or may have their crossarms treated at any one of the plants listed in the sections g or zz.

<u>Company</u>	<u>Plant Location</u>
American Creosote Works	Jackson, Tennessee
American Crossarm Company	Whitehouse, Florida
American Crossarm & Conduit Co.	Chehalis, Washington (1)
Anthony Forest Products	El Dorado, Arkansas (2) (3)
Atlantic Wood Industries, Inc.	Fruitland, Maryland
Brooks Lumber Company	Bellingham, Washington (1)
Conroe Creosoting Co.	Conroe, Texas
Dis-Tran. Inc.	Alexandria, Louisiana
Cascadian Co., Inc.	Eugene, Oregon (3)
Crown Zellerbach	Gulfport, Mississippi
R. G. Haley International Corp.	Bellingham, Washington
Hatheway-Patterson Corp.	Houston, Texas
Hughes Brothers	Seward, Nebraska (1)
International Paper Company	DeRidder, Louisiana
Koppers Company	Gainesville, Florida Morrisville, N. C. (2) (3)
Langdale Company	Valdosta, Georgia
Lockhart Company	Lockhart, Alabama
Wm. C. Meredith Co.	Atlanta, Georgia
Moss-American, Inc.	Meridian, Mississippi
Neidermeyer-Martin Company (Pacific Wood Treating Corp.)	Ridgefield, Washington (1)
Pennington West Coast Sales Co.	Eugene, Oregon (3) (1)
Plantation Wood Products, Inc.	Albany, Georgia
Southern Wood Piedmont Co.	Spartanburg, South Carolina
Structural Wood Systems	Greenville, Alabama (2) (3)
John C. Taylor Lumber Sales, Inc.	Sheridan, Oregon
Texas Tie & Timber Sales, Inc. (W. J. Smith Wood Preserving Co.)	Denison, Texas
Utility Structures Engineering, Inc.	Fresno, California (2) (3)
Weekly Lumber Company	Rockledge, Florida Tampa, Florida
Wyckoff Lumber Company	Seattle, Washington

- (1) Laminated & Solid Sawn
 - (2) Laminated Only
 - (3) Crossarm Manufacturing Only
- No Number Indicates Solid Sawn Only

g - Crossarms

Crossarm Treating Only

Firms listed below have acceptable crossarm treating facilities, but do not manufacture crossarms or treat poles.

<u>Company</u>	<u>Plant Location</u>
Casswood Treated Products Company	Beardstown, Illinois
Coleman Evans Wood Preserving Company	Whitehouse, Florida
Fordyce Wood Treaters, Inc.	Fordyce, Arkansas

July 1984

j - Screw, lag

Applicable Specifications: Edison Electric Institute
Specification TDJ-3 1964,
"Standards for Lag Screws"

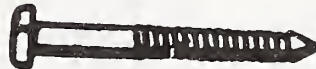
Applicable Sizes : 1/2 inch diameter, 4 inch length
1/2 inch diameter, 5 inch length
5/8 inch diameter, 4 inch length
5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

A. B. Chance Company
Dixie Electrical Manufacturing Company

Joslyn Manufacturing and Supply Company
Kortick Manufacturing Company
McGraw-Edison

Utilities Service Company



k - Insulators, suspension

ANSI Class	52-9	52-1	52-4	52-3
Type	Clevis	Clevis	Clevis	Ball & Socket
Disc Diameter	4-1/4"	6"	9" or 9-1/2"	9" or 9-1/2"
M & E Rating, lbs.	10,000	10,000	15,000	15,000
Leakage, inches	6-3/4	7	11-1/2	11-1/2
Flashover; kV: Dry-Wet	60 - 30	60 - 30	80 - 50	80 - 50
NOTES	(3)(4)	(3)(4)	(5)	(2)

Manufacturer

Catalog Number

Chance	C907-1009	C907-1001	-	-
Joslyn (Pinco)	L1814	L1510	L-970	L-960
Lapp	6815-70	6605	9100	9000
Locke	16044	16583	15S410	15S409
Porcelain Prod. (Knox)	84300	86012	-	-
Sediver	CT-4R2	-	-	-
Victor Insulators, Inc.	817	804	-	-

Notes:

- (2) To be used only on transmission lines.
- (3) To be used only on distribution lines.
- (4) Use two insulators for 12.5/7.2 kV deadends and three insulators for 24.9/14.4 kV deadends.
- (5) Use two insulators for 24.9/14.4 kV deadends.

k - Insulators, suspension

ANSI Class Type	52-3 Ball & Socket	52-4 Clevis	52-5 Ball & Socket	52-6 Clevis
Disc Diameter	10"	10"	10"	10"
M & E Rating, lbs.	15,000	15,000	25,000	25,000
Leakage, inches	11-1/2	11-1/2	11	11
Flashover: kV: Dry-Wet	80 - 50	80 - 50	80 - 50	80 - 50
NOTES	(2)	(1)	(2)	

Manufacturer

Catalog Number

Joslyn (Pinco)	L1060	L1070	L1500	L1570
Lapp	8200	8100	301425	2300
Locke	20S840	20S580	30S255	30S257
Porcelain Prod. (Knox)	81022	81012	-	-
Sediver	-	CT-6R2	-	-

Notes: (1) Use two for 24.9/14.4 kV deadends.
(2) To be used only on transmission lines.



Conditional List
k(2)
July 1984

k - Insulator, Suspension

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sediver</u>		
10" suspension insulator	997(7/27/72)	To obtain experience,
N-6R2 (ball & socket, 15,000 lbs.)	1068(6/26/75)	
CT-12R2 (clevis, 25,000 lbs.)	1186(5/8/80)	Same as above
N-12R2 (ball & socket, 25,000 lbs.)	1175(11/2/79)	

k - Insulator, Distribution Deadend

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u> Distribution deadend Catalog No. C654-0000 "Epoxilator II" (15 kV line-to-line) Catalog No. C654-2500 "Epoxilator II" (25 kV line-to-line)	965 4/22/71 1082 1/22/76 1129 12/15/77	1. To obtain experience 2. For use as deadends on distribution systems only 3. Recommended maximum working load is 5,000 lbs. 4. Not recommended for use in areas subject to contamination.
<u>Joslyn</u> Distribution deadend UDI 671-3002	1074 9/25/75 1088 4/15/76	For use as deadends on distribution systems only up to 15 kV line-to-line voltage.
Distribution deadend UDI 671-3010	1074 9/25/75 1088 4/15/76	For use as deadends on distribution systems only up to 25 kV line-to-line voltage.
<u>Lapp</u> Distribution deadend Catalog No. 151001, 15 kV Catalog No. 151002, 25 kV	1282 6/21/84	Same as Chance
<u>Plastigage</u> Distribution deadend H-15 kV-4 H-25 kV-6	1158 3/1/79 1208 3/19/81	1. To obtain experience 2. For use as deadends on distribution systems only 3. Not recommended for use in areas subject to contamination.

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary.

Conditional List
k(3.1)
April 1985

k - Insulator, Distribution Deadend

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Salisbury</u> Distribution deadend Catalog No. 9501, 15 kV Catalog No. 9575, 25 kV	1226 1/7/82	Same as Chance [See Cond. k(3)]
	1291 12/20/84	
<u>Sediver</u> Distribution deadend ADI-4 15 kV ADI-6 25 kV	1286 9/6/84	Same as Chance [See Cond. k(3)]

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary.

n - Bolt, double arming

Applicable Specification: ANSI C 135.1, "Standards for Galvanized Steel Bolts and Nuts."

Applicable Sizes : 5/8 inch diameter, 12 inch through 24 inch length

3/4 inch diameter, 20 inch through 24 inch length

The following manufacturers have shown compliance with the applicable specifications for double arming bolts:

A. B. Chance Company
Dixie Electrical Manufacturing Company
Hughes Brothers
*Joslyn Manufacturing and Supply Company
Kortick Manufacturing Company
*McGraw-Edison
Portland Bolt & Manufacturing Company
Steel City Bolt & Screw Co., Inc.
Utilities Service Company



*"Static proof" designs available.

o
April 1985

o - Bolt, eye, oval

Applicable Specification: ANSI C135.4, "Standards for Galvanized ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch diameter, 6 inch through 20 inch length
3/4 inch diameter, 8 inch through 20 inch length

The following manufacturers have shown compliance with the applicable specifications for oval eye bolts:

Berny's Forging Company
A. B. Chance Company
Dixie Electrical Manufacturing Company
*Joslyn Manufacturing Company
Kortick Manufacturing Company
*McGraw-Edison
Power Line Hardware
Utilities Service Company

*"Static proof" designs available.



Shoulder Eye Bolt
for Transmission Structures

3/4 inch diameter, 8 inch through 20 inch length

	<u>Catalog Number</u>
Joslyn	J9528 to J9540
Kortick	K9558 to K2570
McGraw-Edison	DF10E8 thru DF10E20

p - Connector, Distribution

Applicable Specification: "REA Specification for Connectors," DT-8

Copper Type Conductors
Connections to same size or smaller

C'Weld Copper Copper	2A 0x7	2x3	4A	6A 4	8A 6
<u>Bare Conductor</u>					
Anderson/Sq. D	DG-1/0	DG-1	DG-2	DG-4	DG-6
(s) Blackburn	RT11	RT02	RT02	RT04	RT06
(s) Burndy	KS-25	KS-23	KS-23	KS-20	KS-17
(s) Dossert	DS-10-F	DS-6-F	DS-6-F	DS-3-F	DS-2-F
Fargo	GC-5020	GC-5002S	GC-5002	GC-5004	GC-5006
(s) Frankel	B-1/0	B-2	B-3	B-4	B-6
(s) Greaves	-	A-8	-	A-5	A-3
(s) ILSCO	IK-1/0	IK-2	IK-2	IK-4	IK-6
(s) Joslyn	-	IF	2F	4F	6F
(s) Kearney	118109	118109	118108	118104	118102
(s) Krueger & Hudepohl	UC58C-EV	-	-	-	-
(s) Penn-Union	S1/0	S2	S3	S4	S6
(s) Reliable	-	1F	2F	4F	6F
ITT Royal	1739	1739	-	-	-
(s) Sherman	TS1/0	TS2ST	TS-2	TS-4	TS-6
(s) Weaver	10W	1W	2W	4W	6W

Over Armor Rods

Anderson/Sq. D	K-5	K-4	K-4	K-2	K-2
Blackburn	2B350	2B350	2B4/0	2B2/0	2B1/0
Burndy	KVS-31	KVS-31	KVS28	KVS26	KVS26
Fargo	GC-5035	GC-5035	GC-5040	GC-5020S	GC5020
ILSCO	IKB-350	IKB-350	IKB-4/0	-	-
(s) Kearney	118112	118112	118111	118110	118110
Penn-Union	VT-4	VT-3	VT-3	VT-2	VT-1
Weaver	350CX	350CX	4/0CX	2/0CX	1/0CX

(s)designates split bolt connectors

Long Connectors (Split Bolt)
Copper to Copper

	2	4	6
Anderson/Sq. D	C-2-L	C-4-L	C-6-L
Blackburn	2H3	4H3	6H3
Burndy	KS-22-3	KS-20-3	KS-17-3
Dossert	DS5-3	DS3-3	DS2-3
Greaves	A-9	A-6	A-4
Joslyn	-	4-F	6-F
Kearney	118107	118105	118103
Penn-Union	SEL-3	SEL-4	SEL-6
Reliable	-	4F	6F
Sherman	-	TSS-4	TSS-6
Weaver	2W3	4W3	6W3

p - Connectors, Service (Parallel Groove)

Applicable Specification, "REA Specification for Connectors,"DT-8

Aluminum-to-Aluminum

Solid or Stranded

	<u>No. 2</u>	<u>No. 4</u>
Alcoa	490.0	490.0
Anderson/Sq. D	LC-51A	LC-51A
Bethea Hardware	APG-1	APG-1
Blackburn	PAE 2121-9	PAE 2121-9
Burndy	UC25R2R	UC25R2R
Electrical Specialty Products, Inc.	PG-51C	PG-51C
Fargo	GA-620	GA-620
Joslyn	AL24KK	AL46KK
Penn-Union	PCAA-10BF	PCAA-10BF
Reliable	AL24KK	AL46KK
Weaver	NICA2	NICA2

p - Connectors, Service (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

Aluminum-to-Copper

Solid or Stranded

	<u>2 Al to 4 Cu</u>	<u>4 Al to 6 Cu</u>
Alcoa	R193	195
Anderson/Sq. D	LC-511A	LC-511A
Blackburn	PAC345	PAC345
Fargo	GA-620C	GA-620C
Joslyn	AL24UU	AL46UU
Reliable	AL24UU	AL46UU

p-6
April 1985

p - Connectors, Service

Applicable Specification, "REA Specification for Connectors," DT-8

Copper-to-Copper

Solid or Stranded

<u>Manufacturer</u>	<u>No. 4</u>	<u>No. 6</u>
Anderson/Sq. D	4E	6ES
Blackburn, ITT	4N	6N
Burndy	KP4C	KP6C
Dante	SE-3	SE-2
Dossert	ES-4	ES-6
Fargo	GC-5004	GC-5006
Ilsco	SX-4	SX-6
Joslyn	R46	R68
Kearney	118118	118117
Penn-Union	SX4	SX6
Reliable	R-46	R-68
Sherman	--	SC6X
Weaver	4SE	6SE

p - Connectors, Compression

SERVICE

	<u>Aluminum-to-Aluminum</u> <u>Aluminum-to-Copper</u>	<u>Copper-to-Copper</u>
Alcoa	"SECS"	-
Anderson/Sq. D	VAUS	VCCS
ITT Blackburn	CS, KL	-
Burndy	"Linkits"	YDS-C, YDS-W
Electrical Specialty	VSE	-
Homac	"Shure Splicers"	-
Kearney	"Serv-ens"	-
National Tel. Supply	"Nicopress"	-
Penn-Union	"Penn Sleeves"	-

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.

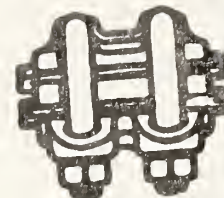
p - Connectors, Transmission

BOLTED TYPE

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to ACSR
 ACSR to Copper

Alcoa	580 Series
Blackburn	2U Series
Burndy (ACSR to ACSR)	UP-A, UP-R



When ordering these clamps specify size, stranding and material of both conductors.

Compression Type

ACSR to ACSR
 Same Size



<u>Conductor Size</u>	<u>Alcoa</u>	<u>Anderson</u>	<u>Burndy</u>	<u>Kearney</u>	<u>ITT Blackburn</u>
1/0	5074.438	VPUS	YCS25R	OHR-1/0-61AJ	RCJ10
2/0	5074.484	-	YCS26R	OHR-2/0-61AJ	RCJ20
3/0	5075.547	Order	YCS27R	OHR-3/0-61AJ	RCJ30
4/0	5075.609	by	YCS28R	OHR-4/0-61AJ	RCJ40
266.8 kcmil	5076 Order by	Conductor	YCS30R	HR-266-267AJ	RCJ266M
336.4 kcmil	5076 stranding	Size	YCS33R	HR-336-267AJ	RCJ336M

ACSR to Copper

Alcoa	5070 Series
Anderson/Sq. D	VPUS
Burndy	YCR-R-CA

(Order by conductor sizes)

u - Deadend for alumoweld guy strand

Strand Size 3#10(4M) 7#12(6M) 7#11(8M) 7#10(10M) 7X.110"(11.5M) 7#9(12.5M) 7X.121"(14M) 7#8(16M) 7X.148"(20M)

Formed Type
Alumoweld Guy Strand

Chance
For standard guy 6M-AWTLG 8M-AWTLG 10M-AWTLG 12.5M-AWTLG

Helical Line Prod.
For standard guy HG517-6M HG519-8M HG521-10M HG523-12.5M HG524-14M HG525-16M HG528-20M

Preformed Line Prod.
For standard guy AWDE-4108 AWDE-4110 AWDE-4113 AWDE-4116 AWDE-4118 AWDE-4119 AWDE-4120 AWDE-4122 AWDE-4126

For wrapped guy WGL-4110 WGL-4113 WGL-4116 WGL-4120

Automatic
Alumoweld Guy Strand

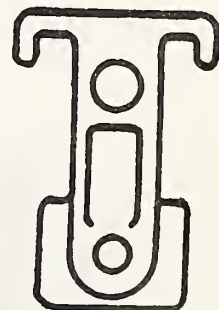
Fargo GDE-300 GDE-301 GDE-301 GDE-301 GDE-302

Reliable 5200 5201 5201 5202

v
 April 1985

v - Guy Attachment
 for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	37,800 N (8500 lbs.)
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*-	-
Bethea Metals	-	-	AGA56	FPE5-6
Bethea Hardware	-	-	AG-5*	PE5-6A
Champ	-	-	CH58GH*	CH21PE
Chance	5004	0100	C203-0168*	-
Continental Electric	-	-	GA-54,GAD-56-4*	PEP-66-45
Dixie	D5004	D0100	DD-9460,DD-9462*	-
Flagg (MIF)	-	-	P151A,P151X*	PX88
Joslyn	J25164	J6500	J6555,J6556	-
Kortick	K4035,K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	HGA-58C*	PGA-548
Universal Electric	-	-	UGA-5	-
Util. Service	31030	5531	-	-



*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

July 1984

v - Guy attachment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Pole band, with cone head bolt J-6281 and guy clip J-6275 J-6280 (for 6" to 10" pole) J-6270 (for 8" to 14" pole)	745 8/16/62	To obtain experience. For distribution lines only and 10,000 lbs maximum loading.

W
April 1985

w - Insulators, guy strain
(Fiber Reinforced Plastic)

Ult. Strength, pounds	11,000	15,000	21,000
<u>Barron Bethea</u>	BB-11-CC Series	BB-15-CC Series	BB-21-CC Series
<u>Continental</u>	G-11 Series	G-15 Series	G-21 Series
<u>Flagg (MIF)</u>	150 Series	150 Series	210 Series
<u>Joslyn-Empire</u>	400 Series	500 Series	650 Series
<u>Kearney</u>	-	321015	321021
<u>McGraw-Edison</u>	-	DEG 15 Series	DEG 30 Series
<u>Plastigage</u>	HSI1-1P Series	HSI-2X Series	HSI3-1P Series
<u>Hughes Brothers</u>	-	692 Series	694 Series

x - Rod, anchor

Applicable Specification: ANSI C135.2, "Standards for Galvanized Ferrous Strand Eye Anchor Rods."

Applicable Sizes: Single guy - 5/8 inch diam. 6, 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

Double guy - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

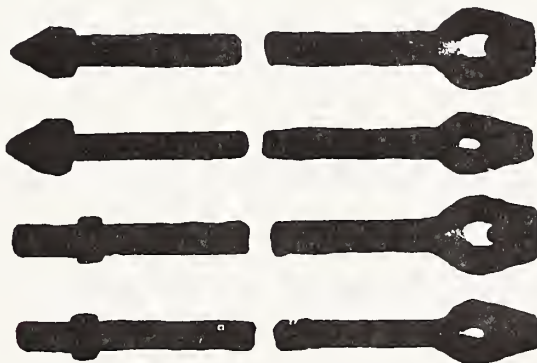
Single Guy Drive - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

Double Guy Drive - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

The following manufacturers have shown compliance with the applicable specifications. Some manufacturers cannot supply all sizes listed above. Check with manufacturer or distributor for availability.

Blackburn
Chance
Dixie
Grip-Tite

Joslyn
Kortick
McGraw-Edison
Utilities Service



y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

DISTRIBUTION GUY STRAND

Grade Size	Siemens Martin		High Strength (HS)			Extra High Strength (EHS)		
	1/4" 3/8"	7/16"	1/4" 9/32"	5/16" 3/8"	7/16"	1/4" 9/32"	5/16" 3/8"	3/8"
<u>Manufacturer</u>								
Alcan Cable	X	X	X	X	X	X	X	X
Armco Steel Corp.	X	X	X	X	X	X	X	X
Bethlehem Steel	X	X	X	X	X	X	X	X
CF & I	X	X	X	X	X	X	X	X
Cal-Wire	X	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X	X	X	X	X	X	X
Seal Wire Co.	X	X	X	X	X	X	X	X
Southwire	X	X	X	X	X	X	X	X
Texstrand	X	X	X	X	X	X	X	X
Bridon Am- erican Corp.	X	X	X	X	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade Size	High Strength (HS)			Extra High Strength (EHS)						
	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
<u>Manufacturer</u>										
Alcan Cable	X	X	X	X	X	X	X	X	X	X
Armco Steel Corp.	X	X	X	X	X	X	X	X	X	X
Bethlehem Steel	X	X	X	X	X	X	X	X	X	X
CF & I	X	X	X	X	X	X	X	X	X	X
Carl-Wire	X	X	X	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X	X	X	X	X	X	X	X	X
Seal Wire Co.	X	X	X	X	X	X	X	X	X	X
Southwire	X	X	X	X	X	X	X	X	X	X
Texstrand	X	X	X	X	X	X	X	X	X	X
Bridon Am- erican Corp.	X	X	X	X	X	X	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A363 (Class A, B or C Coating)

OVERHEAD STATIC WIRE

<u>Grade</u> <u>Size</u>	<u>High Strength (HS)</u>		<u>Extra High Strength (EHS)</u>	
	<u>3/8"</u>	<u>7/16"</u>	<u>5/16"</u>	<u>7/16"</u>
<u>Manufacturer</u>				
Alcan Cable	X	X	X	X
Armco Steel Corp.	X	X	X	X
Bethlehem Steel	X	X	X	X
CF & I	X	X	X	X
Cal-Wire	X	X	X	X
Davis-Walker	X	X	X	X
Florida Wire and Cable	X	X	X	X
Indiana Steel and Wire	X	X	X	X
Paulsen Wire Rope Corp.	X	X	X	X
Seal Wire Co.	X	X	X	X
Southwire	X	X	X	X
Bridon American Corp.	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A363.

y
July 1984

y - Al-Zn Alloy Coated Steel Wire
Applicable Specification: ASTM A785 (Classes 30 & 45)
Condition of Acceptance - To obtain experience

Distribution Guy Strand

<u>Grade</u> <u>Size</u>	<u>Siemens Martin</u>			<u>High Strength</u>					<u>Extra High Strength</u>				
	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem Steel	X	X	X	X		X	X	X	X		X	X	X

Transmission Guy Strand

<u>Grade</u> <u>Size</u>	<u>High Strength</u>					<u>Extra High Strength</u>				
	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem Steel		X		X	X		X	X	X	X

(Purchaser should specify class 30 or class 45)

z - Anchors, Expanding and Plate

DISTRIBUTION

Designated Maximum holding power-lbs.		6000	8000	10,000	12,000
Min. Area - sq. in.		90	100	120	135
Rod Dia. - inches		5/8	5/8	3/4	3/4
Rod Length - feet		7	7	8	-
	<u>Type</u>				
Chance	8 way	88135	88135	88135	88135
Dixie	4 way Plate	D88100-G -	D88115-G D7502-G	D88135-G -	D88135-G D7504-G
Everstick	3 way 4 way	834 -	836 -	8310 84-3/4	- -
Grip-Tite	8 way	A322086G	A322088G	A322812G	A322812G
Joslyn	8 way Plate	J8100-G -	J8115-G J7502-G	J8135-G J7503-G	J8135-G J7504-G
McGraw-Edison	4 way	DA1E5	DA1E6	DA1E6	DA1E7
Power Line Hardware	8 way	8-100G	8-115G	8-135G	8-135G
South Central	8 way	-	84115AG	84135AG	84135AG
Utilities Service	8 way Plate	C88100-G -	C88115-G C617-G	C88135-G C622-G	C88135-G C822-G

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

ae - Surge Arrester, Substation*

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u> Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV	1164 5/24/79	To obtain experience.
Surge arrester, intermediate class, metal oxide type, Tranquell, 3 kV thru 120 kV	1197 10/9/80	To obtain experience
<u>Joslyn</u> Surge Arrester, intermediate class, metal oxide type, Type ZI 3 thru 144 kV	1268 10/27/83	To obtain experience
Surge arrester, station class, metal oxide type, Type ZS, 3 kV thru 240 kV	1278 4/12/84	To obtain experience
<u>McGraw-Edison</u> Surge arrester, station class, metal oxide type, VariSTAR 3 kV thru 312 kV Type ATZ1A	1223 11/19/81	To obtain experience
Surge arrester.inter- mediate class,metal oxide type,VARISTAR 9 kV thru 120 kV, Type AZF	1287 9/27/84	To obtain experience
<u>Ohio Brass</u> Surge arrester, station class, metal oxide type Dynavar, 3 kV thru 357 kV	1175 11/2/79 1239 7/29/82	To obtain experience
Surge arrester, intermediate class, metal oxide type, Dynavar, 3 kV thru 120 kV	1242 9/9/82	To obtain experience
<u>Westinghouse</u> Surge arrester, station class, metal oxide type, SMX-30, 3 thru 240 kV	1256 4/6/83	To obtain experience

*For instructions concerning application at substations refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af - Cutouts, Distribution, Open

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
Chance	C	15, 27 kV
General Electric	9F34D	15, 27 kV
Joslyn	Series 2	15, 27 kV
Kearney	MX (with or without loadbreak accessory)	15, 27 kV
McGraw-Edison	S1	15, 27 kV
S & C Electric	XS	15, 27 kV
Southern States	Series 66 Series 70	15, 27 kV 15 kV
Westinghouse	NCX LBU-11	15, 27 kV 15, 27 kV

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

ag - Fuses, Current Limiting, Backup

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
15 kV Class		
Type K-Mate 25	1084	1. To obtain experience
Catalog No. C70L-31KA	2/19/76	
25 kV Class		
Type K-Mate 25	1196	2. Must be used in series
Catalog No. C70L-32KA	9/18/80	with external expulsion fuse 25 K or 15 T or smaller or with CSP transformers 50 kVA or smaller.
<u>High-Tech Fuses</u>	1290	
15 kV Class	11/29/84	
No. HTDE23 (X)025		Same as above
25 kV Class		
No. HTDE24 (X)025		
<u>McGraw-Edison</u>		
15 kV Class		
No. FAH6H45	1094	Same as above
25 kV Class	7/29/76	
No. FAH7H45		
<u>RTE</u>		
15 kV Class		
Catalog No. 3553025M11	1140	Same as above
25 kV Class	6/1/78	
Catalog No. 3554025M11		
<u>Westinghouse</u>		
15 kV Class		
Type CLTX, 25K/15T	1105	Same as above
25 kV Class	1/6/77	
Type CLTX, 25K/15T		

ah
July 1984

ah - Tie, insulator, formed type

Manufacturer

Type

Preformed Line Products

WT "Wraplock"
(Order for specific
conductor size and
insulator)

ST "Groove-Formed"
side tie (Order for
specific conductor
size and insulator)

ao - Bolt, strand eye, straight (thimble eye)

Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch, 6 through 12 inch length
3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable specifications:

A. B. Chance Company
Dixie Electrical Manufacturing Company
Joslyn Mfg. and Supply Company
Kortick Manufacturing Company
*McGraw-Edison
Utilities Service Company



*"Static proof" designs available.

ap-1
April 1985

ap - Clamp, hot line
Copper and Copperweld-copper Conductor

<u>Conductor Size</u>			
Copper	2/0	1/0	2 thru 6
Copperweld-copper	_____	<u>2A</u>	<u>4A thru 8A</u>
Fargo	GH-209	GH-209	GH-209
Weaver	IWS	IWS	IWS

Clamps listed below have springs and enclosed thread chambers.
They are recommended for use in areas where severe corrosion
or vibration trouble is experienced.

Anderson	BH-00	BH-00	BH-00
Blackburn	HLC 2108	HLC 2108	HLC 2108
Chance	S1520CC	S1520CC	S1520CC
Electrical Specialty	BHC	BHC	BHC
Fargo	GH-100*	GH-100*	GH-100*
Ideal	3532	3532	3532
Penn-Union	HLC-020-LS	HLC-020-LS	HLC-020-LS

* For use with CL Fuse, order GH-201

at - Guy Marker
8 Foot Length
Plastic or Fiberglass

<u>Manufacturer</u>	<u>Catalog Number</u>
Auburn Extrusions	TK-808 (Yellow) (with bolt type clamp)
Chance	96-PBG-2 (Gray) 96-PBG-2Y (Yellow) 96-PBG-2ORG (Orange)
Chance*	96-FRG-GRY (Gray) 96-FRG-YEL (Yellow) 96-FRG-ORG (Orange)
Electrical Materials*	70-7 (Gray) 70-7 (Yellow) 70-7 (Green) 70-7 (Orange)
Joslyn	J1491Y (Yellow) J1491G (Gray)
Nordic	HRG-8 (Orange)
Preformed Line Products*	PG-5508 (Gray) PG-5518 (Yellow)
Radar Engineers*	6032 (Yellow)
Tranpol*	HGG-OL8Y-C (Yellow)
Virginia Plastics*	TG-125-8G (Gray) TG-125-8Y (Yellow)
Virginia Plastics**	FG-8G (Gray) FG-8Y (Yellow)

* For use with formed or automatic type deadends for guy strand; will not fit over bolt type clamps.

** Available with either 1 or 2 bolt clamps.

Conditional List
at
July 1984

at - Reflective Guy Marker
8-foot length

Plastic or Fiberglass

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*Nordic HG-815 yellow	1061 3/20/75	To obtain experience.

*For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

av - Conductor, ACSR

Applicable Specification: ASTM Specification B 232-78
(or latest revision)

Preferred Sizes: (Larger sizes may be used where the engineer's study shows they are required.)	<u>Distribution</u>	<u>Transmission</u>
	4 - 6/1	1/0 - 6/1
	4 - 7/1	2/0 - 6/1
	2 - 6/1	3/0 - 6/1
	2 - 7/1	4/0 - 6/1
	1/0 - 6/1	266.8 kcmil - 26/7
	2/0 - 6/1	336.4 kcmil - 26/7
	3/0 - 6/1	477 kcmil - 26/7
	4/0 - 6/1	556.5 kcmil - 26/7
	266.8 kcmil 18/1	795 kcmil - 26/7
	336.4 kcmil 18/1	954 kcmil - 54/7
	477 kcmil 18/1	

The following manufacturers have shown compliance with the applicable specifications:

Alcan Cable

Aluminum Company of America

Anaconda Ericsson

Essex

Kaiser

Nehring

Noranda

Pirelli Cable

Reynolds

Southwire

NOTES

1. Conductors with 18/1 stranding have different sag characteristics than conductors with 6/1 or 26/7 stranding. This difference in sag characteristics must be taken into consideration in the line design.

2. 266.8 kcmil 26/7, 336.4 kcmil 26/7, and 477 kcmil 26/7 may be used for distribution underbuild on transmission lines.

av - Conductor, copper

Applicable Specifications: ASTM Specification B 1-70 (or latest revision) for hard-drawn solid
ASTM Specification B 3-63 (or latest revision) for soft or annealed solid
ASTM Specification B8-72 (or latest revision) for hard-drawn stranded and soft stranded

Preferred Sizes:	Hard-drawn solid	4 and 6
	Soft or annealed solid	4 and 6
	Hard-drawn stranded	2x3, 1/0 x 7, 2/0 x 7
	Soft stranded	4 and 6

The following manufacturers have shown compliance with the applicable specifications:

Alcan Cable

Anaconda Ericsson

Essex

General Cable

Hatfield (Sizes 4 & 6)

Phelps Dodge

Rome Cable

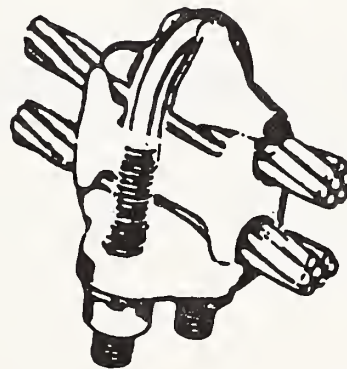
Service Wire Company

Southwire

bn - clamp, loop deadend

For ACSR

	3/0	2/0	1/0	2	4
ALCOA	-	413	413	412	411
Anderson/Sq. D	LC-74B	LC-71B	LC-70B1	LC-70B	LC-70B
Bethea Hardware	ALD-7373-U	ALD-34-U	ALD-1313-U	ALD-1313-U	ALD-1313-U
Blackburn	DLC23	DLC2106	DLC2106	DLC2106	DLC2106
Burndy	-	-	UW25R	UW2R	UW2R
C & R	-	-	CRLD-10	CRLD-10	CRLD-10
Electrical Specialty Products	LD-4	LD-2	LD-1	LD-1	LD-1
Fargo	GA-145	GA-145	GA-144	GA-144	GA-144
Weaver	-	-	WDE-10	WDE-2	WDE-2



bo
October 1984

bo - Shackle, anchor

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson/Sq. D	AS-25
Bethea Hardware	ASH-45
Chance	5801
Continental	AS-25-5-4
Dixie	D5801
Joslyn	J2742
Knox	3022
Kortick	K4481
Lapp	33852
Lindsey	3260
McGraw-Edison	DC7J1
Ohio Brass	13722
Powerline Hardware	AS-1
Utilities Service	4106

bv, Rods, armor

Aluminum or aluminum alloy rods for use on ACSR

Blackburn Formed Type

Dulmison Formed Type

Helical Line Products Formed Type

Preformed Line Products Formed Type

Copperweld rods for copper or CWC conductor

Helical Line Products Formed Type

Preformed Line Products Formed Type

Alumoweld rods for aluminum clad steel (Alumoweld)
overhead ground wire

Helical Line Products Formed Type

Preformed Line Products Formed Type

Bronze rods (10 inch length) for jumper protection

Preformed Line Products Formed Type

bx
January 1985

bx - Splice, automatic

<u>Copper</u>	<u>Burndy</u>	<u>Fargo</u>	<u>Reliable</u>
6	ADS6S	GL-111	61
4	ADS4S	GL-112	41
2 x 3		GL-115	-
1/0 x 7	ADS1/0	GL-117	107
2/0 x 7	ADS2/0	GL-118	207
3/0 x 7	ADS3/0	GL-119	307
4/0 x 7	ADS4/0	GL-120	407
 <u>CWC</u>			
8A		GL-112	
6A	ADS4	GL-113	47
4A	ADS2	GL-115	27
2A		GL-117	
 <u>ACSR</u>			
	ADS-R Series*	GL-400 Series*	7650 Series*
 <u>Aluminum Alloy (6201 and 5005)</u>			
		GL-100A Series	AL55 Series
		GL-1000A Series	

*For use on distribution conductors 4/0 and smaller only.

bx - Splice, automatic

DISTRIBUTION

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Fargo</u> AWAC 4-4/3 GLA-105 AWAC 2-4/3 GLA-110 AWAC 1/0 - 4/3 GLA-115	1087 4/1/76	To obtain experience.

by
April 1985

by - Deadend, Automatic and Formed Type

Conductor Size

<u>Cu</u>	<u>CWC</u>	<u>Fargo</u>	<u>Reliable</u>
-	4A	GD-515	27-SDS
-	6A	GD-513	47-SDS
-	8A	GD-512	-
2 x 3	-	GD-515	271
4	-	GD-512	41LD
6	-	GD-511	61LD

ACSR

*Fargo

GD-400 Series

*Preformed

OG-9360 thru 9366
#OHDE-9534 thru 9540, 4577

*Reliable

7650 Series

#may only be used with a spool insulator (Item cm) and appropriate clevis for neutral and secondary applications.

Aluminum Alloy
(6201 and 5005)

Fargo

GD-A Series

Preformed

OG-9360 thru 9366

Reliable

AL Series

*For use on distribution conductors 4/0 and smaller only.

bz - Switch, oil

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u> Capacitor oil switch Type TSC, 38 kV max. 100 ampere capacitor switch 300 ampere load switch	940 4/2/70	To obtain experience.
Oil switch with 125 kV BIL accessory Type NR, 15 kV, single- phase, remote electric control, 200 amp. at 75 to 100 percent power factor	1046 7/25/74	1. To obtain experience. 2. For use on single- phase taps of 24.9/14.4 kV multi- grounded wye systems.
<u>South Bend Controls, Inc.</u> Capacitor, oil switch Type CSD-95, 95 kV BIL 15 kV Max. 200amp.	1284 8/2/84	To obtain experience
Oil switch with 125 kV BIL accessory, CSD-125, 15 kV, single-phase, 200 amp	1290 11/29/84	1. To obtain experience 2. For use on single-phase taps of 24.9/14.4 kV multi-grounded wye systems.

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

Manufacturer	Acceptable Mounting on Structures	Tilting Ins.		Vertical Break		Side Break		Center Break		Double Break	
		Type	kV	Type	kV	Type	kV	Type	kV	Type	kV
Brown Boveri Elec. (ITE)	Horizontal	TTR6	15-345								
A. B. Chance	Horizontal Phase over Phase Vertical					D6(L)15-34.5 D6(L)15-34.5 D6(L)15-34.5					
Johnson	Horizontal	VIP	15-230	LS	15-69		M	15-230			
Joslyn (Hi-Voltage)	Horizontal Horizontal	RF-2(VL)	15-230	RB-1(VL)	15-25 RB-1* 15-115						
Kearney	Horizontal	NE-2	15-34.5	AR 60-P	15-69						
MEMCO	Horizontal Horizontal	AgF AgC	15-69 15-69	EA	15-345		EE	69-230			
G & W Electric Company	Horizontal	MK-40	15-69	PMB-40A	15-69	LPC	69-230				
Powerdyne (Kearney)	Horizontal Phase over Phase								V2-V4 V2	15-230 15-23	
ITT Royal Switchgear	Phase over Phase Horizontal								RG-63(L) RSL-L(L)	15-69 15-69	

(L) Means gas or solid material full-load interrupters are accepted and available.
 (VL) Means vacuum full-load interrupters are accepted and available.
 * These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV.
 NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group operated

(not Suitable for Substation Use)

Manufacturer	Acceptable Mounting	Vertical Break		Side Break		Center Break	
		Type	kV	Type	kV	Type	kV
Chance	Horizontal			D6(L)	15-34.5		
	Phase over Phase			D6(L)	15-34.5		
	Vertical			D7(L)	15-34.5		
K-P-F	Horizontal	SV-202	23	A202-A208	15-110		
	Phase over Phase			A202	15-23		
	Phase over Phase			W202	15-23		
Powerdyne (Kearney)	Phase over Phase			MD202	15-23		
	Horizontal			S	15-23	V2	15-23
	Phase over Phase			S	15-23	V2	15-23

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, three-pole, group-operated
(Factory Preassembled)

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Vertical Break Type kV</u>	<u>Side Break Type kV</u>
Chance	Horizontal		D7(L)15-27
	Phase over phase (A)		D7(L)15-27
	Vertical (A)		D7(L)15-27
	Horizontal (B)		D7(L)34.5 (200 kV BIL)#
	Phase over phase (B)		D7(L)34.5 (200 kV BIL)#
	Vertical(B)		D7(L)34.5 (200 kV BIL)#
S & C	Horizontal (A)		Alduti(L)15-25
	Phase over phase (A)		Alduti(L)25
	Vertical (A)		Alduti(L)15-25
	Phase over phase (B)	Alduti(L)34.5 (200 kV BIL)#	Alduti(L)34.5 (200 kV BIL)#
	Vertical (B)	Alduti(L)34.5 (200 kV BIL)#	

(L) Means gas or solid material full-load interrupters are accepted and available.

Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for substation use.

(B) NEMA standard switches for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.

cr - Bracket, Angle Suspension

Applicable Specifications: "REA Specification for Angle Suspension Brackets," DT-4

<u>Manufacturer</u>	<u>Distribution</u> <u>5/8"Dia.</u>	<u>Transmission</u> <u>3/4"Dia.</u>
Chance		5728
Joslyn	J7935	J7936
Kortick	K6231	K6230
McGraw-Edison	DC8E1	DC8E2
Utilities Service	545	546

Angle Bracket, Swinging

Applicable Specification: T-8
Drawing : TM-111A, TM-111B

Swinging angle bracket with hardware and fittings (for 230 kV transmission)

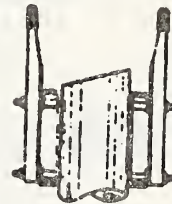
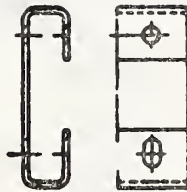
<u>Manufacturer</u>	<u>TM-111A</u>	<u>TM-111B</u>	<u>Type #1</u>	<u>Type #2</u>
American Crossarm & Conduit Company	AC8801	AC8802	X	X
Brooks	64233A	64233B	X	
Hughes	2848	2848	X	X
Joslyn	REA 64-8A	REA 64-8B	X	

cs - Bracket, Pole Top Pin

For Transmission and 24.9/14.4 kV Distribution

Applicable Specifications: "REA Specifications for Pole Top
Brackets for Channel Type Pins,"
D-14

Chance	2157
Joslyn	J2045
Kortick	K8130
McGraw-Edison	DP3A1
Utilities Service	36690



ct - Plate, Double Arming

Transmission

<u>Manufacturer</u>	<u>4" x $\frac{1}{2}$" x 24"</u>	<u>4" x $\frac{1}{4}$" x 17"</u>
Chance	5844	5819
Dixie	D5844	D5845
Joslyn	J1600	J1607
Kortick	K1454	K1465
McGraw-Edison	DP21A1	DP23A3
Power Line Hardware	-	DAP-17
Utilities Service	4117	-

cu - Brace, crossarm, wood

Span, inches	60	60
Drop, inches	<u>18</u>	<u>30</u>
Aluma-Form	6018	6030
American Crossarm & Conduit Company	320	325
Brooks Lumber Company	44680	44681
Cascadian Company	15018	15030
Dis-Tran	DT-60	DT-601
Hatheway Patterson	16018	-
Hughes Brothers	2045-CC	2045-D
Joslyn	J4760R	J4730W-R
Utilities Structures Engineering Incorporated	CU-60-18	CU-60-30

Braces listed below have 26-inch hole spacing. They are interchangeable with the flat steel braces listed on page h.

Aluma-Form	AF626
American Crossarm & Conduit	600
Brooks Lumber Company	58128
Dis-Tran	DT-28
Hatheway Patterson	7026
Hughes Brothers	2023
Joslyn	J5526

Brace, crossarm, fiber reinforced plastic

Continental	CRB-28
Joslyn	RP-26
Plastigage	CAB-28
Hughes Brothers	533

cx - Splice, oval tube

	<u>Copper</u>			
<u>Conductor Size:</u>	<u>0 x 7</u>	<u>2 x 3</u>	<u>4</u>	<u>6</u>
National Tel. Supply	464	463	459	457

	<u>Copperweld-Copper</u>	
<u>Conductor Size:</u>	<u>6A</u>	<u>8A</u>
National Tel. Supply	460	459



cy-1
April 1985

cy - Splice, Compression
ACSR

Conductor Size	Alcoa	Anderson/ Sq. D	Burndy
4 6/1	2-piece	VC-36R	"Unisplice"
4 7/1	Order	VC-36R	(1-piece)
2 6/1	by	VC-36R	or Y-S
2 7/1	Conductor	VC-36R	(2-piece)
1/0	Size	VC-50R	Order by
2/0	and	VC-50R	Conductor
3/0	Stranding	VC-61R	Size and
4/0	"	VC-61R	Stranding
266.8 kcmil 26/7	2-piece	VC-831-1-RM	2-pc.
336.4 kcmil 26/7	Compression	VC-831-1-RM	Type YTS
477 kcmil 26/7	Alloy Type	VC-832-2-RM	"
556/6 kcmil 26/7	CJ	VC-833-3-RM	"
795 kcmil 26/7		VC-835-4RM	"
954 kcmil 54/7		VC-835-4RM	"

Conductor Size	Fargo	ITT Blackburn	Kearney 2 pc.	1 pc.
4 6/1		Type RC		OH4-61-71AS
4 7/1		1-piece		OH4-61-71AS
2 6/1		Order		OH2-61-71AS
2 7/1		by		OH2-61-71AS
1/0	TJA-8129	Conductor	OH1/0-61A	OH1/0-61AS
2/0	TJA-7729	Size	OHR2/0-61A	
3/0	TJA-7829	and	OHR3/0-61A	
4/0	TJA-7929	Stranding	HR4/0-61A	
266.8 kcmil 26/7	Uni-grip	#4 to 4/0	HR-266-267A	
336.4 kcmil 26/7	one die		HR336-267A	
477 kcmil 26/7	system		HR-477-267A	
556.5 kcmil 26/7	Order by		HR-556-267A	
795 kcmil 26/7	conductor size			
954 kcmil 54/7	and stranding			

Conductor Size	Nat. Tel. Supply	Homac	ESP
4 6/1	"Nicopress"	"Tension	FTR-4
4 7/1	(1-pc. or 2-pc.)	splicer"	FTR-4
2 6/1	Order by Conduc-	(1-piece or	FTR-2
2 7/1	tor Size and	2-piece)	FTR-2.5
1/0	Stranding	Order by	FTR-1/0
2/0	2-pc.	Conductor	FTR-2/0.5
3/0	"	Size and	FTR-3/0
4/0	"	Stranding	FTR-4/0
336.4 kcmil 18/1			FTR - 336
477 kcmil 18/1			FTR - 477
266.8 kcmil 26/7	"	2-pc.	
336.4 kcmil 26/7	"	"	
477 kcmil 26/7	"	"	
556.5 kcmil 26/7	"	"	
795 kcmil 26/7			
954 kcmil 54/7			

da - Bracket, insulated

	<u>Bracket without Insulator</u>	<u>Bracket with 1-3/4" Spool Insulator</u>	<u>Bracket with 3" Spool Insulator</u>
Chance	0327	0327-C909-1032	0327-C909-1034
Dixie	D0327	-	-
Joslyn	J1300	J1301	J1303
Kortick	K9278	K9081	K9082
McGraw-Edison	DC2C1	-	-
Hughes	1077LI	1077SI	1077I



dm - Bracket, transformer

(For cluster mounting of two or three transformers on pole)

<u>Manufacturer</u>	<u>Transformer Size, kVA</u>	<u>Band Type</u>	<u>Through Bolt Type</u>
Aluma-Form	3-50	6M3-6	3MW-24
	75-100	15M3-6	12MW-24
Chance	3-25	215, 315	C212-0142
	3-50		
	37½-50	250, 350	C212-0146
	75-100		
Dixie	3-25*		D-0565
	37½-50		
	75-100		D-0561-CP
Hughes	3-25*		3021
	37½-50		3020
	75-100		3020 with adapter plates and back plate
Joslyn	3-25*	24352, 24353 with adapter plate	
		24524	J6865
	37½-50	24352, 24353 (two needed)	
	75-100	24352, 24353 (two needed)	
McGraw-Edison	3-25*	DT6C2	DT6C1
	37½-50	DT7C2	DT7C1
	75-100	DT8C2	DT8C1
Turner	3-25*		305-25
	37½-50		305-100
	75-100		305-100

*These brackets will accommodate 25 kVA transformers which are made with a 12-inch spacing between support lugs. Those 25 kVA transformers having a 23½-inch spacing between lugs will require the bracket listed for 37½-50 kVA.

For mounting of two transformers

Aluma-Form	3-100	DM-4M2
	3-50	DM-2M2
Chance	3-100	C212-0001
Hughes	3-50	3022
McGraw-Edison	3-50	DT16C1
Turner	3-50	205-25

dp
January 1985

dp - Clamp, ground wire

Transmission

For grounding steel towers and substation structures

Bolt Included

(For use with copper ground wires)

<u>Manufacturer</u>	<u>Catalog Number</u>
Penn-Union	GH-30-C-A1
ITT Royal	12202-T (Type LCS)
UTM	910-027-01

For use in: Pole Grounding Assembly TM-9
Capacitor Assemblies M9-11, M9-12 and M9-13

<u>Manufacturer</u>	<u>For 5/8" Bolt</u>	<u>For 3/4" Bolt</u>
Continental	SBL-33	-
Dixie	D-5452	-
Flagg (MIF)	PA-166A	-
Joslyn	J1163	J1164
McGraw-Edison	DG1C5	DG1C6

du - Link, Extension

DISTRIBUTION

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Hardware	LCE-14
Chance	C207-0112
Continental	CEL-14
Flagg (MIF)	PA319
McGraw-Edison	DC33B6
Utilities Service	495

TRANSMISSION

(25,000 lbs. min. strength)

Joslyn J26082

Guy Extension Link
(For "H" Structure)

<u>Manufacturer</u>	<u>One Guy Attachment</u>	<u>Two Guy Attachment</u>
Joslyn	J22421	J22523

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

Conditional List
du(1)
April 1985

du - Connecting Links

Conditions: To obtain experience in conjunction with pole bands [Item fv(1)]
Strength Rating: 25,000 lbs. ultimate loading.

<u>Manufacturer</u>	<u>Link to guy</u>	<u>Size</u>	<u>Meeting No. and Date</u>
Hughes	3154 Link to Insulators	3/8" x 2" x 9-1/2"	1172 9/20/79
Hughes	3176	3/8" x 3" x 9-1/2"	1172 9/20/79
	<u>Link to guy</u>		
Joslyn	J26033	3/8" x 2" x 9-1/2"	1292 1/10/85
	<u>Link to Insulators</u>		
Joslyn	J26034	3/8" x 3" x 9-1/2"	1292 1/10/85

em - Brace, crossarm, special
(angle alley arm)

DISTRIBUTION

15" span, 14" drop; 1-1/2" x 3/16"

Dixie	D17939
Joslyn	J1415
Kortick	K1978
McGraw-Edison	DB4L1
Utilities Service	5514

TRANSMISSION

2'-6" span x 1'-8" drop
1-3/4" x 3/16"

3'-6" span x 2'-3" drop
1-3/4" x 3/16"

Chance	--	6999
Hughes	AS-2309-B	AS-2309-A
Joslyn	J1430	J1442
Kortick	K1975	K1976
McGraw-Edison	DB4L3	DB4L4
Utilities Service	5509	5510

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u> Single post insulator brackets C206-0209 for 12.5/7.2 kV construction only C206-0010 for 24.9/14.4 kV construction Deadend bracket assembly, C206-0179 Deadend bracket assembly, C206-0211 for 24.9/14.4 kV construction	1049 9/5/74 1081 1/8/76	1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected.
<u>Continental</u> Standoff bracket IACB-18-5	1065 5/15/75	(Same as above)
<u>Flagg (MIF)</u> Single post insulator bracket, P542 Deadend bracket assembly, PAX188A Deadend bracket assembly, PAX188M for 24.9/14.4 kV construction Standoff bracket, PA619H	1032 12/20/73 1044 6/27/74 1048 8/22/74	(Same as above)
<u>Joslyn</u> Single post insulator brackets 24840.1, for 12.5/7.2 kV construction only 24840.2, for 24.9/14.4 kV construction	1043 6/13/74	(Same as above)

eq - Narrow Profile Brackets and Special Arm Assemblies
 (See REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Anderson/Sq. D</u> Standoff bracket, COB-E-180-TGL	1180 1/31/80	1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected.
<u>Bethea Hardware</u> Single post insulator bracket, HBF-10-9-GC Standoff bracket VIB3-18-GC	1156 2/1/79 1213 6/4/81 1278	Same as above.
<u>Dixie</u> Deadend bracket assembly D21142 for 12.5/7.2 kV	4/12/84 1220 10/8/81	Same as above.
Deadend bracket assembly D21144 for 24.9/14.4 kV		
<u>Universal Electric</u> Single post insulator bracket, SAB-3-18-GC	1271 12/15/83	Same as above.
<u>Western Power Products</u> Single post insulator bracket, HDB-200-R, for 7.2/12.5 kV construction only	1152 12/7/78	Same as above.

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Hughes Brothers</u>		
Two-phase angle bracket 761-36-8	1032 (12/20/73)	1. To obtain experience.
Two-phase pin bracket 813-36	1294 (2/14/85)	2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator, 560-13		
Standoff insulator, 560-18		
Suspension bracket, 615-18		
Deadend arm, 540-36	1063(4/17/75)	3. Not to be used where conductor galloping may be expected.
Standoff bracket, 892-18	1089(4/29/76)	4. Not to be used in con- taminated atmospheres.
<u>Chance</u>		
Two-phase pin bracket C653-0638	1043(6/13/74)	Same as above
Standoff insulator C653-0621		
Deadend arm C653-1023	1049(9/5/74) 1141(6/15/78)	
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-36V	1181(2/14/80)	Same as above.
Two-phase angle bracket GPB2-568M-36E		
Standoff insulator GPB-58M-13		
Standoff insulator GPB-58M-18		
Deadend arm GDEA-58-3.0-36-2E		
Suspension bracket GPB-58M-18E		

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Bethea Hardware</u>		
Two-phase pin bracket 6742-36P	1285 8/16/84	1. To obtain experience
Standoff insulator bracket 6745-13P		2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator bracket 6745-18P		3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Flagg (MIF)</u>		
Two phase angle bracket 7561-336E	1201 12/4/80	Same as above.
Two phase pin bracket 7561-436		
Standoff insulator 7561-012		
Standoff insulator 7561-018		
Suspension bracket 7561-818		
Standoff bracket 7561-218		
Deadend arm 7554-636-4E	1272 1/5/84	

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Two-phase pin bracket C653-0987	1049(9/5/74)	1. To obtain experience.
Standoff insulator C653-0988		2. For use only in scenic areas and locations where right-of-way is limited.
Deadend arm C653-1024	1041(6/15/78)	3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-44--V-1.375	1181(2/14/80)	Same as above.
Two-phase pin bracket GPB2-558H-48-V-1.375	1272(1/5/84)	
Standoff insulator GPB-58M-19-V-1.375		
Standoff insulator GPB-58H-20-V-1.375		
Standoff bracket GIACB-58M-18		
Deadend arm GDEA-58-3.0-48-2E		
<u>Hughes Brothers</u>		
Deadend arm, 540-48	1063 (4/17/75)	Same as above.
Standoff insulator, 880-20	1081 (1/8/76)	
Two-phase pin bracket, 883-48	1089 (4/29/76)	
Standoff insulator, 870-19	1294 (2/14/85)	
Two-phase pin bracket, 862-44		
Standoff bracket, 892-18		

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Bethea Hardware	12.5/7.2 kV 24.9/14.4 kV	VIB3-18-R1-GC-C VIB3-18-GC	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613H PA619H	
Hughes Brothers		892-18	670-40
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Universal Electric		SAB-3-18-GC	

For two distribution arresters in parallel or one
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B2

For Intermediate Arrester Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		WBMA-1	R3CSA-48
Bethea Hardware	12.5/7.2 kV	VIB3-18-R1-GC-C	

fn
April 1985

fn - Bracket, Cutout Extension

<u>Manufacturer</u>		<u>Catalog Number</u>
Aluma-Form		1HCA-C-18
Anderson Elec./	12.5/7.2 kV	COB-E-120-TGL
Square D	24.9/14.4 kV	COB-E-180-TGL
Bethea Hardware	12.5/7.2 kV	VIB3-12F-GC
	24.9/14.4 kV	VIB3-18-GC
Chance		C653-1038
Continental	12.5/7.2 kV	IACB-12-5-LGE
	24.9/14.4 kV	IACB-18-5-LGE
Flagg (MIF)	12.5/7.2 kV	PA613H
	24.9/14.4 kV	PA619H
Hughes Brothers		892-18
McGraw-Edison		DC34B1
Power Line		
Hardware	12.5/7.2 kV	CA-12-3GL
Universal Electric		SAB-3-18-GC

fv - Guy Attachments
Pole Bands with Through Bolts
for Transmission Lines

Strength Ratings: 25,000 lbs. ultimate loading
(45° guy angle)*

<u>Manufacturer</u>	<u>Pole Band With Through Bolts and Associated Hardware**</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hughes	3108 C.x	1172 9/20/79	To obtain experience.
		1292 1/10/85	
Joslyn	J26043.xGL (includes fetter drive lag screws and thru bolt)	1292 1/10/85	To obtain experience.

*For a 30° guy angle, capacity of pole bands should be derated.

**Appropriate connecting links (Item du(1)) should be ordered with the pole band.

ga - Watthour and Watthour-Demand Meters
 1Ø, 2 and 3 wire or 2/3 wire 120/240 volts

Self-Contained Types

1 Manufacturer	2 Type of Base	3 Watthour Meter Type	4 Mechanical Demand Watthour Type	5 Thermal Demand Watthour Type	6 Number of Terminals
Duncan	Bottom Con. Socket	MS	BMS-2S	TMS	4
General Electric	Bottom Con. Socket	I50A I70S	IM50A IM70S	-	4
Sangamo	Bottom Con. Socket	J3A J4S	J3DA J4DS	-	4
Westinghouse	Bottom Con. Socket	D2A D5S	D2AM D5SM	- D2SH	4

Transformer Rated Types

Duncan	Bottom Con. Socket	MS	BMS	TMS	5 or 6
General Electric	Bottom Con. Socket	I50A I70S	IM50A IM70S	-	5 or 6
Sangamo	Bottom Con. Socket	J3A J4S	J3DA J4DS	-	5 or 6
Westinghouse	Bottom Con. Socket	D2A D2S	D2AM D2SM	-	5 or 6

ga - Watthour and Watthour-Demand Meters
Polyphase 2 element - 3 wire, 240 volts - Delta and Network

Self-Contained Types

1 Manufacturer	2 Type of Base	3 Watthour Meter Type	4 Mechanical Demand Watthour Type	5 Thermal Demand Watthour Type	6 Number of Terminals
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Duncan	Bottom Con. Socket	MT-12S or 13S	BMT-12S or 13S	TMT-12S	5 or 8
General Electric	Bottom Con. Socket	V62A V62S	VM62A VM62S	- -	5 -
Sangamo	Bottom Con. Socket	S2A S2S	S2DA S2DS	- -	5 or 8 -
Westinghouse	Bottom Con. Socket	D5S5	D5S5M	-	-

Transformer Rated Types

Duncan	Bottom Con. Socket	MT-5A MT-5S	BMT-5A BMT-5S	TMT-5A TMT-5S	8 8
General Electric	Bottom Con. Socket	V63A V63S	VM63A VM63S	- -	8 -
Sangamo	Bottom Con. Socket	S3A S3S	S3DA S3DS	- -	- 8
Westinghouse	Bottom Con. Socket	D5A-2 D5S-2	D5A2M D5S2M	- D4S-2H	- 8

ga - Watthour and Watthour-Demand Meters
 Polyphase 2 element - 4 wire Delta - 120/240 volts

<u>Self-Contained Types</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Manufacturer	Type of Base	Watthour Meter Type	Mechanical Demand Watthour Type	Thermal Demand Watthour Type	Number of Terminals	
Duncan	Bottom Con. Socket	MT-15S	BMT-15S	TMT-15S	7	
General Electric	Bottom Con. Socket	V66A V66S	VM66A VM66S	- -	7	
Sangamo	Bottom Con. Socket	S6A S6S	S6DA S6DS	- -	7 or 8	
Westinghouse	Bottom Con. Socket	D5A7 D5S7	D5A7M D5S7M	- -	7 or 8	

Transformer Rated Types

Duncan

General Electric

Sangamo

Westinghouse

Not shown in REA Bulletin 161-12

ga - Watthour and Watthour-Demand Meters
Polyphase - 2-1/2 element - 4 wire wye - (120/208) (277/480) volt

Self-Contained Types

1 Manufacturer	2 Type of Base	3 Watthour Meter Type	4 Mechanical Demand Watthour Type	5 Thermal Demand Watthour Type	6 Number of Terminals
Duncan	Bottom Con. Socket	MT-14S	BMT-14S	TMT-14S	7
General Electric	Bottom Con. Socket	V65A V65S	VM65A VM65S	- -	7 -
Sangamo	Bottom Con. Socket	S5A S5S	S5DA S5DS	- -	- 7 or 8
Westinghouse	Bottom Con. Socket	D5A8 D5S8	D5A8M D5S5M	- -	7 -

Transformer Rated Types

Duncan	Bottom Con. Socket	MT-6A MT-7S or 6S	BMT-6A BMT-7S or 6S	TMT-6A TMT-7S or 6S	10 7 or 13
General Electric	Bottom Con. Socket	V65A V65S	VM65A VM65S	- -	7 or 13 -
Sangamo	Bottom Con. Socket	S5A S5S	S5DA S5DS	- -	- 13
Westinghouse	Bottom Con. Socket	D5A8 D5S8	D5A8M D5S8M	- D4S8H	- 13

ga - Watthour and Watthour--Demand Meters
Polyphase - 3 element - 4 wire wye - (120/208) (277/480) volt

<u>Self-Contained Types</u>					
<u>Manufacturer</u> 1	<u>Type of Base</u> 2	<u>Watthour Meter Type</u> 3	<u>Mechanical Demand Watthour Type</u> 4	<u>Thermal Demand Watthour Type</u> 5	<u>Number of Terminals</u> 6
Duncan	Bottom Con. Socket	- MT-16S	- BMT-16S	-	- 7
General Electric	Bottom Con. Socket	V64A V64S	VM64A VM64S	-	- 7 or 8
Sangamo	Bottom Con. Socket	S4A S4S	S4DA S4DS	-	- 7 or 8
Westinghouse	Bottom Con. Socket	D5-A3 D5-S3	D5A3M D5S3M	-	- 7 or 8
<u>Transformer Rated Types</u>					
Duncan	Bottom Con. Socket	MT-9A MT-9S or 10S	BMT-9A BMT-9S or 10S	-	12 13
General Electric	Bottom Con. Socket	V64A V64S	VM64A VM64S	-	- 13
Sangamo	Bottom Con. Socket	S4A S4S	S4DA S4DS	-	- 13

sd - Current Transformers
Outdoor Type

<u>Manufacturer</u>	<u>.6 kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
Associated Engineering	GT HA WEO	BB-15 LG-15	BB-25 LG-25 COF	LG-34.5 COF	COF-350
Astra	AA TFW AB AD				
Duncan	DCBW DCCW DCAB				
General Electric	JCR-0 JCW-0 JAK-0 JAD-0	JKW-5 JCK-5	JKW-6 JKW-150 KG-150	JKW-7 JKW-200 KG-200	JKW-350 KG-350
Sangamo	B6 Type				
Westinghouse	CSF/CMS CMF CLC/CLE	KOR-11 KON-11	ACT-150 KOR-15	ACT-200	ACT-350

NOTE: The transformer types listed above are accepted in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List
sd
July 1984

sd - Current Transformers
Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Electromagnetic Ind.</u>		
Type UMCT, 0.6 kV	971 (7/15/71)	To obtain experience.
Type UCT, 0.6 kV	981	
Type C03-110, 15 kV	12/16/71	
Type C03-150, 25 kV	1076	
Type C03-200, 34.5 kV	10/30/75	
Type IK-350, 69 kV	1216	
	7/23/81	
<u>Balteau Standard</u>		
Type KEWO-110, 15 kV	1212	To obtain experience.
Type KEWO-150, 25 kV	5/21/81	
Type KEWO-200, 34.5 kV		
Type KEWO-350, 69 kV		

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6 kV</u>	<u>1.2kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
Associated Engineering	CL TL		PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	POF-350
Duncan	DVE-6 DVF-6					
General Electric	JVA-0 JVP-0		JVW-5 JVW-110	JVW-6 ET-150 JVT-150	JVW-7 ET-200 JVT-200	ET-350 JVT-350
Sangamo	T6A T7					
Westinghouse	PPM		VOG-11 VOZ-11	PTOM-150 APT-150	APT-200	APT-350 LPT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

July 1984

se - Voltage transformers

Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. & Date</u>	<u>Conditions</u>
<u>Astra</u>		
Type DB, 0.6 kV	1087	To obtain experience.
Type DA, 0.6 kV	4/1/76	
Type DF, 0.6 kV	1261 6/23/83	
<u>Electromagnetic Industries</u>		To obtain experience.
Type U-2-350, 69 kV	1216(7/23/81)	
Type PO4-110, 15 kV	1076	
Type PO5-150, 25 kV	10/30/75	
Type PO4-200, 34.5 kV	1222(11/5/81)	
Type U-450, 0.6 kV	1080(12/23/75)	
<u>Balteau Standard</u>		
VE02-110, 15 kV	1212	To obtain experience.
VE05-110, 15 kV	5/21/81	

zz - Poles

Applicable Preservatives: Creosote, pentachlorophenol-petroleum and waterborne salts (ACA and CCA).

(Firms listed on pages zz-1 through zz-6 are also qualified to treat crossarms. Crossarms should be fabricated at one of the plants listed on page g-1 or g-2.)

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
Alabama Wood Treating Corp.	--	Mobile, AL	--
American Creosote Works, Inc.	--	Jackson, TN	--
	--	Louisville, MS	--
	--	Pensacola, FL	--
American Crossarm & Conduit Co.	--	Chehalis, WA	--
American Wood	--	Richton, MS	--
Arkwood	--	Omaha, AR	--
Atlantic Wood Industries, Inc.	--	Portsmouth, VA	--
	--	Savannah, GA	--
	--	Vidalia, GA	Vidalia, GA
	--	Fruitland, MD	--
Baldwin Pole & Piling Co.	--	Bay Minette, AL	Bay Minette, AL
J. H. Baxter & Co.	--	Eugene, OR	--
	--	Long Beach, CA	--
	--	The Dalles, OR	--
	--	Arlington, WA	Arlington, WA
	--	Weed, CA	--
	--	Laramie, WY	--
Benton Creosoting Co. (Kennedy Saw Mills)	--	Benton, LA	--
Broderick Wood Products Co.	--	Denver, CO	--
Brown Wood Products Co.	--	Brownville, AL	Brownville, AL
	--	Louisville, KY	Louisville, KY
Cahaba Pressure Treated Forest Products, Inc.	--	Brierfield, AL	--
Carolina Creosoting Corp.	--	Leland, NC	--

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
Cascade Pole Co.	--	Tacoma, WA	--
	--	Olympia, WA	Olympia, WA
Cowboy Timber Treating, Inc.	--	Manderson, WY	--
Colfax Creosoting Co.	--	Pineville, LA	--
Conroe Creosoting Co.	--	Conroe, TX	--
Crown Zellerbach Corp.	--	Gulfport, MS	Gulfport, MS
	--	Mobile, AL	--
	--	Urania, LA	Urania, LA
	--	Sallisaw, OK	--
Dant & Russell, Inc.	--	North Plains, OR	--
Davis Timber Co., Inc.	--	Hattiesburg, MS	Hattiesburg, MS
Durable Wood Preservers, Inc.	--	Charlotte, NC	--
Eppinger and Russell	--	Chesapeake, VA	--
Escambia Treating Co.	--	Brunswick, GA	Brunswick, GA
	--	Pensacola, FL	--
	--	Camilla, GA	Camilla, GA
	--	Brookhaven, MS	Brookhaven, MS
Fernwood Industries	--	Fernwood, MS	Fernwood, MS
Fordyce Wood Treaters, Inc.	--	Fordyce, AR	--
Garland Creosoting Co.	--	Longview, TX	--
General Wood Preserving Co., Inc.	--	Leland, NC	--
Hart Creosoting Co.	--	Jasper, TX	--
Hoosier Treating Co.	--	Gosport, IN	Gosport, IN
Huxford Pole & Timber Co., Inc.	--	Huxford, AL	--
Idaho Pole Co.	--	Bozeman, MT	Bozeman, MT
International Paper Co. Wood Preserving Division	--	De Ridder, LA	--
	--	Joplin, MO	Joplin, MO
	--	Navasota, TX	--
	--	*Wiggins, MS	*Wiggins, MS

*Cellon process also accepted.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
Jasper Creosoting Co.	--	Jasper, TX	--
Kerr-McGee Chemical Corp. Forest Prod. Division	--	Meridian, MS	Meridian, MS
	--	Columbus, MS	--
	--	Texarkana, TX	--
Koppers Co., Inc.	--	Carbondale, IL	--
	--	*Denver, CO	--
	--	Florence, SC	Florence, SC
	--	Gainesville, FL	Gainesville, FL
	--	Grenada, MS	--
	--	Houston, TX	--
	--	*Montgomery, AL	*Montgomery, AL
	--	N. Little Rock, AR	--
	--	*Oroville, CA	--
	--	Galesburg, IL	--
Lake States Wood Preserving, Inc.	--	Munising, MI	Munising, MI
Langdale Co.	--	Sweetwater, TN	Sweetwater, TN
	--	Valdosta, GA	Valdosta, GA
Lockhart Lumber Co.	--	Lockhart, AL	--
Lufkin Creosoting Co.	--	Lufkin, TX	--
MacGillis & Gibbs	--	Madera, CA	--
McCormick & Baxter Creosoting Co.	--	*Portland, OR	--
	--	*Stockton, CA	--
L. D. McFarland Co.	--	Eugene, OR	Eugene, OR
Marion Pressure Treating Co.	--	Marion, LA	--
William C. Meredith Co.	--	Atlanta, GA	--
T. R. Miller Mill Co., Inc.	--	Brewton, AL	--
Madisonville Creosote Works	--	Madisonville, LA	--
Montana Pole & Treating Plant	--	Butte, MT	--
Niedermeyer-Martin Co. (Pacific Wood Treating Corp.)	--	Ridgefield, WA	--
Oeser Cedar Co.	--	Bellingham, WA	--

*Cellon process also accepted.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
Oliver Treated Products Co., Inc.	--	Hammond, LA	--
Pacific Wood Preserving Panama Timber Co.	--	Cloverdale, CA Panama, OK	-- --
Penta Wood Products, Inc.	--	Siren, WI	--
Pressure Treated Timber Co.	--	Boise, ID	Boise, ID
Selma Treating Co.	--	Selma, CA	--
Southern Wood Piedmont Co.	--	Augusta, GA	Augusta, GA
	--	Baldwin, FL	Baldwin, FL
	--	East Point, GA	--
	--	Macon, GA	--
	--	Wilmington, NC	--
Southeastern Wood Preserving, Inc.	--	Canton, MS	--
Southern Wood Preserving of Hattiesburg, Inc.	--	Hattiesburg, MS	--
Southwest Forest Industries	--	Prescott, AZ	--
Stallworth Timber Co., Inc.	--	Beatrice, AL	Beatrice, AL
	--	Winnfield, LA	Winnfield, LA
Standard Wood Preservers of Shreveport, Inc.	--	Shreveport, LA	--
Swift Lumber Co., Inc.	--	Atmore, AL	--
John C. Taylor Lumber Sales, Inc.	--	Sheridan, OR	Sheridan, OR
Texas Electric Cooperative, Inc.	--	Jasper, TX	--
Texas Tie & Lumber Co. (W. J. Smith Wood Preserving Co.)	--	Denison, TX	--
Tri-State Pole & Piling Inc.	--	Lucedale, MS	--
Union Timber Corp.	--	Homerville, GA	--
Weekly Lumber Co.	--	Rockledge, FL	--
	--	Tampa, FL	--

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
Western Tar Products Corp.	--	Terre Haute, IN	--
Western Wood Preserving Co.	--	Sumner, WA	--
Wheeler Div., St. Regis Paper Co.	-- --	Whitewood, SD Cass Lake, MN	Whitewood, SD Cass Lake, MN
Whitewood Post & Pole Co.	--	Whitewood, SD	--
Wood Treating, Inc.	--	Picayune, MS	--
Wyckoff Company	-- --	W. Seattle, WA Bainbridge Island, WA	-- --
Weyerhaeuser Co.	--	DeQueen, AR	DeQueen, AR

Thermal (Nonpressure) Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>	<u>Quality Assurance Plans</u>
J. H. Baxter & Co.	--	Arlington, WA	Arlington, WA
Bell Lumber & Pole Co.	--	New Brighton, MN	New Brighton, MN
B. J. Carney Industries	--	Sandpoint, ID	--
Cascade Pole Co.	--	Tacoma, WA	--
Cedar Service, Inc. (R. G. Haley & Co., Inc.)	--	Bemidji, MN	--
Idaho Pole Co.	--	Bozeman, MT	Bozeman, MT
Kalispell Pole & Timber Co.	--	Kalispell, MT	Kalispell, MT
MacGillis & Gibbs Co.	--	Minneapolis, MN	--
L. D. McFarland Co.	-- --	Eugene, OR Sandpoint, ID	Eugene, OR Sandpoint, ID
Oeser Cedar Co.	--	Bellingham, WA	--
Page & Hill Forest Products	--	Big Falls, MN	--
Poles Incorporated	--	Newport, WA	--

U ae - Arresters, Surge
(For underground system pole risers or pad-mounted equipment)

(Shielded for Underground System Pad-Mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Metal oxide, AMOV1 U.D. 10, 18 kV	1223 11/19/81	To obtain experience.
<u>RTE</u>		
Metal Oxide Elbow Arrester M.O.V.E. 9, 18 kV	1185 4/24/81	To obtain experience.
(For Underground System Pole Risers)		
<u>General Electric</u>		
Metal Oxide, Tranquell** U.D. II 9, 10, 18 kV	1292 1/10/85	To obtain experience.
Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/80	To obtain experience.
<u>Joslyn</u>		
Metal Oxide, Type ZJ U.D. 9, 10, 18 kV	1266 9/22/83	To obtain experience.
Metal Oxide, Type ZR Intermediate Class* 9, 10, 18 kV	1266 9/22/83	To obtain experience.
<u>McGraw-Edison</u>		
Metal Oxide, AVZ 1B 9/10, 18 kV	1223 11/9/81	To obtain experience.
Metal Oxide AZR Intermediate class 10, 18 kV	1287 9/27/84	To obtain experience.
<u>Ohio Brass</u>		
Metal Oxide, DynaVar VR UD 9, 10, 18 kV	1236 6/10/82	To obtain experience.
Metal Oxide, DynaVar Intermediate Class 9, 10, 18 kV	1236 6/10/82	To obtain experience.

*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

**A non fragmenting U.D. II Arrester is available for 9 & 10 kV designs at higher cost when specified.

U an-1.1
July 1984

U an - Transformers, distribution
pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted
Transformers," U-5.

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three-Phase</u>
Central Moloney (2,4)	"REA-LP" 25-167 kVA	
Dowzer (3,4)	"METRI-PAD" 25-167 kVA	"PM3W-R" 75-500 kVA
ERMCO (1) (4,6) (2,4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2,4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2,4)	"Hi Pad REA" 10-167 kVA	"Hi Pad 3 REA" 45-2500 kVA
Kuhlman (2,4)	"Lo-Pak ALR" 25-167 kVA	
McGraw-Edison (2,4)	Series 20/20 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO/Hammond (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
Pauwels-Chance (2)	"Turf Hugger-R" 10-100-kVA	"Turf Hugger-R" 45-500 kVA
H. K. Porter (2,4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2,4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
United (Ky, AEC) (2,4)	"Pad-Mount" 15-75 kVA	

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual voltage - same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only
- (6) 14.4/24.9 kV

U an - Transformers, Distribution.
Pad-mounted, Dead-Front

(For Underground Application)

Applicable Specifications: REA Specifications for Pad-Mounted
Transformers - U-5

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three Phase</u>
VanTran (3,4)	"Mini Pad U5" 5-167 kVA	"VanPad III-U5" 30-2500 kVA
Wagner (Turbodyne)(2,4)	"Turfline II-R" 25-167 kVA	
Westinghouse (2,4)	"Mini-Pak U-5" 25-167 kVA	Type MTR 75-1500 kVA "Plazapad - U5" 2000-2500 kVA

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual voltage - same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only

U an-2
July 1984

U an - Transformers, distribution
pad-mounted, dead-front

(For unit residential underground application, 7.2/12.5
and 7.6/13.2 kV, 5-25 kVA single phase only)

<u>Manufacturer</u>	<u>Type</u>
Central Moloney	"REA-Mini-LP" 10-25 kVA
ERMCO	"REA-Micro Pad" 10-25 kVA
General Electric	"Micro-Mini-Pad" 10-25 kVA
Howard	"Spacesaver Pad" 10-25 kVA
McGraw-Edison	"Series 10/15 REA" 10-25 kVA
NECO/Hammond	"Little NECO-R" 10-25 kVA
Pauwels-Chance	"Turf Hugger II" 10-25 kVA
RTE	"Ranch Runner" 10-25 kVA
VanTran	"Mite'E 'Mini" 5-25 kVA
Westinghouse	"Micro-Pak U-5" 10-25 kVA

U ax
July 1984

U ax - Cutout and Arrester, Combination
for Underground System Pole Risers

Nominal System Voltage	For 12.5Y/ 7.2 kV	For 13.2Y/ 7.6 kV	For 24.9Y/ 14.4 kV	
Cutout Maximum Voltage Rating	7.8 kV	15 kV	15 kV	27 kV
Application	1Ø Risers	3Ø Risers	1Ø and 3Ø Risers	1Ø and 3Ø Risers
Cutout Current Rating	100 amps	100 amps	100 amps	100 amps

<u>Manufacturer</u>	<u>Catalog Numbers</u>			
Chance	C71D-112PB Series	C71D-112PB Series	C71D-112PB Series	C71F-211PB Series
General Electric	9F80	9F80	9F80	9F80
Joslyn	J9237-P2	J9237-P2/R	J9237-P2-R	J9267-D2
McGraw-Edison	AFS300B Series	AFS300C Series	AFS300C Series	AFS301D Series
Southern States	CA Series	CA Series	CA Series	CA Series
Westinghouse	7.8LBU-II/ 10 LV	15LBU-II/ 10 LV	15LBU-II/ 10 LV	24.9LBU-II/ 18 LV

NOTE: The units listed on this page may be used with single arresters or arresters in parallel, but must be applied in accordance with paragraph VI.A. in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.



U fw - Secondary Tap Connector

Manufacturer

Type or Catalog No.

Raychem

Compression Connectors

CTE-300-00

CTE-400-00

CTE-500-00

Standard Split Bolt

CTE-300-00

CTE-400-00

U fz - Transformer Connector Block, Insulated
Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block
Burndy	Lug	Stud Mole with sealing sleeve
<u>Non-Watertight - For use in above grade locations only</u>		
Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Connector Mfg. Co.	Set Screw	Utilug Bar Connectors, Series NSC, NSM-C, DS-C, NDS-C (Permanent)
	Set Screw	Utilug Bar Connectors, Series NSSC, NSSM-C, NDQC, DQ-C (Disconnectable)
Electrical Spec. Prod.	Lug	Type SU (Permanent)
	Lug	Types SUR and RDSR (Removable) (With Types LA and AI lugs and Sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted	GUC Series
Homac	Set Screw	GUS-200S Series
	Lug	DF Series
	Lug	FTU 125 Series (Disconnectable) with flood seal sleeve kit
ITT	Set Screw	LRT Series
	Lug	SCU, with lugs and sleeves
	Set Screw	TSB-J58C (Permanent)
Penn Union	Set Screw	TSB-D58C (Disconnectable)
	Lug	Type DBAT-LH (Disconnectable)
Reliable RTE	Lug	Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits
	Set Screw	15912-REA (Disconnectable)
	Set Screw	Uni-Joint (Disconnectable)
Utilco	Set Screw	Uni-Joint (Permanent)
	Set Screw	PTF-IN (Permanent)
	Set Screw	PTF-CJU (Disconnectable)

Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U gn - Enclosures, equipment

Applicable Specifications: "REA Specifications for Equipment Enclosures,"
 U-4

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Pad-Mounted</u>		
<u>Continental Columbus</u>		
E/L100	969	To obtain experience
(For use with dead-front pole-type transformers - see Item an)	6/17/71 1080 12/23/75	
<u>Durham</u>		
Series 4242 (dead-front)	966	To obtain experience
Series 5454 (dead-front)	5/6/71	
Series 3452 (dead-front)	1078 (11/26/75)	
<u>Electrical Equipment</u>		
TH1-DF Series (dead-front)	975 (9/16/71)	To obtain experience
<u>Elliott</u>		
EPM-PTS (dead-front)	1293 1/24/85	To obtain experience
<u>Inter-alloys</u>		
3636-DF-SP	1052	To obtain experience
4242-DF-SP	10/31/74	
5454-DF-SP	1133	
6666-DF-SP	2/16/78	
7272-DF-SP		
<u>Malton Electric</u>		
1-Phase Single Unit (dead-front)	978 10/28/71	To obtain experience
<u>McGraw-Edison</u>		
EH12E-DF-REA	994	To obtain experience
EH13E-DF-REA	6/29/72	
EH16E-DF-REA	1119	
EH17E-DF-REA	7/28/77	
EH18E-DF-REA		
EH22E-DF-REA		
<u>Western Power Products</u>		
FG-DF1 (dead-front)	966	To obtain experience
FG-DF3 (dead-front)	5/6/71	

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U gn - Enclosures, equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Carolina Dielectrics</u> Model 0501	994 6/29/72	To obtain experience.
<u>Continental Columbus</u> CW200 Series CW300 Series	969(6/17/71) & 987(3/16/72)	To obtain experience.
<u>Durham</u> Mini-Section Low Profile I, Low Profile III and Tri- Section Series	1077 11/13/75	To obtain experience.
<u>Electrical Equipment</u> LPT-228-P LPT-249-F 3Ø LPT-266-P 3Ø	1103 12/2/76	To obtain experience.
<u>Nordic</u> ND series	A1255 3/24/83	To obtain experience.
<u>Western Power Products</u> Model 24-1 Model 34-2 Model SPM-320 1Ø Model SPM-540 3Ø	966 5/6/71 1136 4/6/78 1209(4/2/81)	To obtain experience.
<u>Willow</u> WT-130 WT-248 WT-364 *WT-130 PM *WT-248 PM **WT-248 XM **WT-364 XM	1038 4/4/74	To obtain experience.

*For pole mounting.
**For crossarm mounting.

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U go - Fault Indicator
(For Construction Unit UM6-4)

<u>Manufacturer</u>	<u>Type</u>
Edison Control Corporation	Series EC100 (single phase) Series EC300 (three phase) (Available with mounting kit KT5002)
Fisher Pierce	Series 1514 (To be used on single-phase circuits only)
McGraw-Edison	Linam
RTE	TPR, LV, MR

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcoa	Lug	Interchange-I ABB Series Use with A-9 insulating boots
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug Set Screw	Series UP(with lugs and sleeves) Series UB(1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Connector Mfg. Co.	Compression	Utilug Sure Seal Splice Kits series SSK, SSKL
Electrical Spec. Prod.	Lug Set Screw	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve) Type UB (with sleeve) splice Type ACL-HSH (6 AWG - 500 kcmil)
Fargo	Set Screw	GU-500 Series
Homac	Lug Lug Set Screw	FS-95 Series with flood seal sleeve kit (8AWG - 350 kcmil) FS-125 Series with flood seal sleeve kit (350 - 500 kcmil) SHC Series
Kearney	Compression Compression	HCR HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
RTE	Compression	Aqua Guard Splice Kit
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

U hb - Cable Accesories
(When ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> 15 kV, used with loadbreak connectors Type LBIC152 Insulating Cap	1227 1/21/82	To obtain experience
25 kV, used with loadbreak connectors Type LBIC252 Insulating Cap	1296 3/28/85	

U hb - Cable Accesories

(When ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u> 15 kV, used with non- loadbreak connectors 600, 650 Series	1016 5/10/73	To obtain experience
25 kV, used with non- loadbreak connectors K600, K650 Series		
35 kV, used with non- loadbreak connectors 750LR Series	1064 5/1/75	
<u>RTE</u> 15 kV, VBT Tee connectors No. 2604360B Series	1126 11/3/77	To obtain experience
15 kV, Protective cap No. 2625041A01		
<u>ITT Blackburn</u> 15 kV, used with non- loadbreak connectors Types 6B and 65B	1131 1/19/78	To obtain experience
25 kV, used with non- loadbreak connectors Types 6C and 65C		
<u>Joslyn</u> 15 kV, used with non- loadbreak connectors PES86/PSS86	1197 10/9/80	To obtain experience
25 kV, used with non- loadbreak connectors PES86--S/PSS86--S	1296 3/28/85	

U hd
July 1984

U hd - Brackets, pothead mounting, and
Brackets, combination pothead and
arrester mounting

Manufacturer

Single Phase

Three Phase

Aluma-Form

TB-EMB-1-2PA

TB-EMB-1-6 PA

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Durham</u>	<u>12.5/7.2 kV</u>	
Model FTSP-CL, single phase pad-mounted, 1 thru 4 fused taps	1020 7/5/73	To obtain experience
Model FTSP-CL3, three-phase pad-mounted, 1 and 2 fused taps	1077 11/13/75	To obtain experience
<u>Electrical Equipment</u>		
FTDF-P Series, single and three-phase, one and two fused taps, pad-mounted	1040 5/2/74	To obtain experience
*GGCL-P Series, single and three-phase, pad-mounted	1047 8/8/74	To obtain experience
<u>Elliott</u>		
Type EPMR, single and three-phase, pad-mounted	993 (6/8/72) 1007 (1/4/73) 1009 (2/1/73) 1010 (2/15/73) 1292 (1/10/85)	To obtain experience
<u>Powercon</u>		
Type PMF, single-phase pad-mounted	981 12/16/71	To obtain experience
Type PMF-8.3, three-phase pad-mounted	998 8/17/72	
<u>Inter-Alloys</u>		
Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience

*Furnished with current limiting fuses.

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>7.2/12.5 kV</u>	
<u>McGraw-Edison</u> EH3A Series, single- phase, pad-mounted	1065 5/15/75	To obtain experience.
<u>Malton</u> MEF21	1108 2/17/77	To obtain experience.
<u>S & C</u> Mark III, Models PMS (with option G-7) 200 ampere three-pole switching and 200 ampere single-pole switching	1112 4/14/77 1198 10/23/80 1202 12/18/80	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp	1151 11/16/78	To obtain experience.
<u>G & W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear. (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 11/20/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>24.9/14.4 kV</u>	
<u>Elliott</u> Type EPMR, single- and three-phase, pad-mounted	1030 11/21/73 1292 1/10/85 1293 1/24/85	To obtain experience
<u>Powercon</u> Type PMF, single-phase pad-mounted Type PMF, three-phase pad-mounted	998 8/17/72	To obtain experience
<u>RTE</u> Type LBS, single- and three-phase, pad- mounted, 300 amp	1095 8/11/76	To obtain experience
FuseTER, series single-phase and three-phase	1296 3/28/85	To obtain experience
<u>Inter-Alloys</u> Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp	1151 11/16/78	To obtain experience

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment
(600 amp.)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elliott</u> Type EPMR, Single and three-phase, pad-mounted 25 kV	1292 1/10/85	To obtain experience
<u>Joslyn</u> Type SG6 (submersible) three-phase switching equipment, 600 amp., 15 or 25 kV	1112 4/14/77	To obtain experience
<u>Kearney</u> Series QE, QEE, QEI (all with option D1) pad-mounted 15 kV, 600 amp three-phase switching and 200 amp single pole switching	1184 4/10/80	To obtain experience
Series VE - pad-mounted, 15 kV and 25 kV, single phase and three-phase vacuum switching, fused or unfused 200 or 600 amps	1184 4/10/80	To obtain experience
Series VP - submersible, single phase and three- phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator	1184 4/10/80	To obtain experience
<u>General Electric</u> Series PSB (pad-mounted) and SSB (submersible) three-phase switching equipment, 200 or 600 amp., 15 or 27 kV	1022 8/2/73	To obtain experience

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hg
July 1984

U hg - Anti-tamper Shield

Manufacturer

Catalog No.

Formed Plastics

7262 Series

McGraw-Edison

UMBY1

Sonoco

S24 Series

U hp - Terminations, Elbow
(rated for switching on three-phase systems)

(when ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kearney</u>		
15 kV, Loadbreak with voltage test point 1115-FC Series	1005 12/7/72 1077 11/13/75	To obtain experience.
<u>RTE</u>		
15 kV, Loadbreak SBT IV 2604600B Series with test point 2604599B Series without test point	1032 12/20/73 1122 9/8/77	To obtain experience.
25 kV, Loadbreak SBT 2604740B Series with test point 2604741B Series without test point	1148 9/28/78	
<u>Elastimold (ESNA)</u>		
15 kV, Loadbreak without voltage test point Style 165-LR	1068 6/26/75	To obtain experience.
15 kV, Loadbreak with voltage test point Style 166-LR		
25 kV, Loadbreak without voltage test point Style 271-LR		
25 kV, Loadbreak with voltage test point Style 272-LR		
<u>General Electric</u>		
15 kV, Loadbreak 9U01A--4-- Series	1133 2/16/78	To obtain experience.
25 kV, Loadbreak 9U01B--5-- Series		
<u>ITT Blackburn</u>		
15 kV, Loadbreak JT2B (without test point)	1054 11/27/74	To obtain experience.

Conditional List
U hp(5)
April 1985

U hp - Terminations, Elbow
(rated for switching on three-phase systems)

(when ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u>		
15 kV, Loadbreak	1162 (4/26/79)	
LBT112M (without test point)	1165 (6/7/79)	To obtain experience
LBT112MT (with test point)	1296 (3/28/85)	
25 kV, Loadbreak		
LBT262M (without test point)	1240 (8/12/82)	To obtain experience
LBT262TM (with test point)		
15 kV, Fused Loadbreak	1251 (1/20/83)	To obtain experience
SPF-T (with test point)		

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Bishop	Splice-Wrap
Blackburn	Type DBS
Connector Mfg. Co.	Utilug Sure Seal
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400
RTE	Aqua-Guard

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Electrical Spec. Prod.	HSB
Panduit	Heat shrink insulating cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products

U hv - Cable, Underground
15 kV Cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
 #2 AWG through 1000 kcmil
Insulation : High Molecular Weight (HMW) or Crosslinked (XL)
 Polyethylene or Ethylene Propylene Rubber (EPR)
Neutral : Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Cablec	XL	Yes	
Conductor Prod.	HMW or XL	Yes	Ridg-lok
Essex	XL	Yes	
Hendrix	HMW, XL or EPR	Yes	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	HMW or XL	Yes	STA-SERVE
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW, XL or EPR	Yes	Serve-Lock Counter Secure
Southwire	XL	No	

*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv - Cable, Underground
25 kV Cable

Applicable Specification: REA Specification U-1
 Conductor : Copper or Aluminum
 #1 AWG through 1000 kcmil
 Insulation : High Molecular Weight (HMW) or Crosslinked (XL)
 Polyethylene or Ethylene Propylene Rubber (EPR)
 Neutral : Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Anaconda Ericsson	XL	No	
Cablec	XL	Yes	
Conductor Prod.	HMW or XL	Yes	Ridg-lok
Essex	XL	Yes	
Hendrix	HMW, XL or EPR	Yes	Neu-lok
Okonite	XL or EPR	Yes	
Pirelli	HMW or XL	Yes	STA-SERVE
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW, XL or EPR	Yes	Serve-lock Counter-Secure
Southwire	XL	No	

*Accepted design meeting the requirements of paragraph 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv-3
July 1984

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: REA Specification U-2
Conductor : Copper, #4 AWG and larger
Aluminum, #2 AWG and larger
Insulation : Cross-linked polyethylene (XLPE)

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Cablec	Copper or Aluminum
Collyer	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phelps Dodge	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2
Conductor : Copper, #4 AWG and larger
Aluminum, #2 AWG and larger
Insulation : Cross-linked polyethylene (XLPE)
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The above cable may be supplied with UL label for Type USE.

U hv - Cable Underground
15 kV and 25 kV Concentric Neutral Jacketed Cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
For 15 kV Cable, #2 through 1000 kcmil
For 25 kV Cable, #1 through 1000 kcmil
Insulation : High Molecular Weight (HMW) or Crosslinked (XL)
Polyethylene or Ethylene Propylene Rubber (EPR)
Neutral : Copper Concentric Neutral
Jacket : High Molecular Weight (HMW) Polyethylene

<u>Manufacturer</u>	<u>Insulation</u>
Cablec	XL
Conductor Products, Inc.	HMW or XL
Essex	XL
Hendrix	HMW or XL
Okonite	XL or EPR
Pirelli	HMW or XL
Reynolds	HMW or XL

NOTE: For grounding purposes insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture.

It is recommended that any place that the jacketing is cut (including the connections to ground rods), it be done above ground in a pedestal.

U hv - Cable, Underground
(15 or 25 kV cable)

TREE RETARDANT

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Conductor Products</u> DFDA 6202 HMW	1148 (9/28/78) 1198 (10/23/80) 1274 (1/9/84)	To obtain experience
UCAR TR-4202 XL	1293 (1/24/85)	To obtain experience
<u>Essex</u> DFDA 6202 HMW	1236 (6/10/82)	To obtain experience
UCAR TR-4202 XL	1293 1/24/85	To obtain experience
<u>Hendrix</u> DFDA 6202 HMW	1151 (11/16/78) 1198 (10/23/80)	To obtain experience
HFDE-4202 (XL)	1281 (5/31/84)	To obtain experience
<u>Pirelli</u> DFDA-6202 HMW	1152 (12/7/78) 1202 (12/18/80)	To obtain experience
UCAR TR-4202(XL)	1288 (10/18/84)	To obtain experience
<u>Reynolds</u> Reynotree-U (DFDA-6202 HMW) HEFD-4202 (XL)	1151 (11/16/78) 1196 (9/18/80) 1255 (3/24/83) 1258 (5/5/83)	To obtain experience
<u>Rockbestos Company</u> HFDA-4202 (XL)	1279 (5/3/84)	To obtain experience
<u>Rome Cable</u> UCAR TR-7521 LLDHMW UCAR TR-4202 (XL)	1271 (12/15/83) 1279 (5/3/84)	To obtain experience
<u>Southwire</u> UCAR TR-4202 EC XL	1284 (8/2/84)	To obtain experience

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Dun-Lap*	7 x 10	DL-D710	DL-C710
	10 x 14	DL-D1014	DL-C1014
	14 x 20	DL-D1420	DL-C1420
	20 x 28	DL-D2028	DL-C2028
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B
For pressure sensitive decal add "D" prefix to catalog number.			
Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028
Lem	7 x 10	LSS-1400	LSS-1500
	10 x 14	LSS-1401	LSS-1501
	14 x 20	LSS-1402	LSS-1502

U hx - Cable Route Marker

Manufacturer

Catalog No.

Surface Mounted

Chance

C554-0001

Above Grade

Carsonite

REA-100

Chance

C554-0183

Dun-Lap

DL-R45
DL-R712

Lyle

UM12-712

May Advertising

MY45A
MY712A

For pressure sensitive decal add "D" prefix to catalog number.

Truck Sign Service

BCW-712

Conditional List
U hy(1)
April 1985

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>AMP</u> "AmpactSplice" (35 kV)	1126 (11/3/77)	To obtain experience
<u>Elastimold (ESNA)</u> Style 1500S, straight splice, through #1/0 (15 kV)	1135 (3/23/78)	To obtain experience
Style 25-S, straight splice, #2/0 through #4/0 (15 kV)	1135 (3/23/78) 873 (7/27/67)	
Style 25-Y, Y-splice (15 kV)	921 (6/26/69)	
Style K-25-S, straight splice (25 kV)		
Style K-25-Y, Y-splice (25 kV)		
Style M-250-S, straight splice (35 kV)	1134 (3/2/78)	
<u>ITT Blackburn</u> Type S4B (15 kV) Type S4C (25 kV)	1160 (3/29/79)	To obtain experience
<u>Joslyn</u> Type PMS152 Straight Splice (15 kV) #4 through #1/0	1251 (1/20/83) 1296 (3/28/85)	To obtain experience
<u>3M</u> Quick Splice II 5411, 5412 (15 kV) (#2 Awg thru #4/0 Awg)	1194 (9/4/80)	To obtain experience
"Quick Splice" 5400 Series (15 kV) (250 kcmil thru 750)	969 (6/17/71) 1024 (8/30/73) 1032 (12/20/73)	
5420 Series (25 kV)		

Used - Current Transformers
600 volt

Direct Burial Type

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
General Electric	JAL-O

Indoor Type for Pad-Mounted Transformers

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Astra	AP
General Electric	JAB-O
Westinghouse	CMV



U si - Anodes, Sacrificial
(Drawings UM11-1, UM26, UM27, M2-7, M2-17)

Zinc Anodes*

	<u>Pre-packaged With Connecting Wire</u>			<u>Bare Continuous Strip (Ribbon)</u>	
	<u>12 lbs.</u>	<u>30 lbs.</u>	<u>60 lbs.</u>	<u>5/8" x 7/8"</u>	<u>1/2" x 9/16"</u>
Federated Metals	S-12 packaged	S-30 packaged	S-60 packaged	Regular Size Type II	Junior size
Harco	AZC12GJ	AZC30GJ	AZC60HJ		
General Corrosion Service	12HII-4A	30HII-4A	60HII-4A		
Stuart	SZ-12 -----VIBROX packaged-----	SZ-30	SZ-60		

*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and REA Specification DT-9, "REA Specification for Zinc Sacrificial Anodes."

U si-2
 January 1985

U si - Anodes, Sacrificial
 (Drawings UM11-1, UM26, UM27, M2-7, M2-17)

Magnesium Anodes**

	<u>Standard Potential</u>				<u>High Potential</u>			
	<u>17 lbs</u>	<u>20 lbs</u>	<u>32 lbs</u>	<u>50 lbs</u>	<u>17 lbs</u>	<u>20 lbs</u>	<u>32 lbs</u>	<u>48 lbs</u>
Federated Metals	17 packaged		32 packaged	50 packaged				
Harco	AMC17J	AMC20J	AMC32J	AMC50J	AMC17G	AMC20G	AMC32G	AMC48G
Kaiser Mag.	17 Vibra Pak		32 Vibra Pak	50 Vibra Pak	17 Electromag Vibra Pak		32 Electromag Vibra Pak	50 Electromag Vibra Pak
General Corrosion Services	17 packaged		32 packaged	50 packaged	17D3 packaged	20D2 packaged	32D5 packaged	48D5 packaged
Stuart	SM-17		SM-32	SM-50	SM-17H		SM-32H	SM-48H

**When ordering, specify magnesium anodes that meet REA Specification DT-10, "REA Specification for Magnesium Sacrificial Anodes."

PART III - GENERAL PLANT ITEMS

Explanation of Groups

- Group I Instruments in this classification are laboratory or shop standards, used for calibrating all other instruments. They are a precision type which demand the best of care. THEY ARE NOT FOR FIELD USE.
- Group II Instruments in this classification are high accuracy weather-proof portables, used for general field testing such as checking substations, voltage regulators or control equipment.
- Group III Instruments in this classification are weatherproof portables or semi-portables of the thermal type, used for checking substation balance, substation loading, transformer loading, feeder loading, feeder voltages and many consumer loads.
- Group IV Instruments in this classification are general purpose weather-proof portables with moderate accuracy, used for checking consumer loads and used where only moderate accuracy is required.

M2-17)

Potential

lbs 48 lbs

AMC48G

50
Electromag
ra Pak

75
aged

AMMETERS, INDICATING

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Biddle	50,000 Series	Thermal, max. pointer	III
General Electric	AK-4	Hook-on (volt-ammeter)	IV
	AK-5	Hook-on (volt-ammeter)	IV
HD Electric	"Max-I-Meter" (All Models)	Thermal ammeters	III
Multi-Amp	115	Volt-Amp-Wattmeter	II
	125	Volt-Ammeter	II
	135	Portable, general field testing	II
Sangamo	ADS	Thermal, max. pointer, socket mount	III
TIF Instruments	PP1000	Hook-on (volt-ammeter)	IV
Westinghouse	PA-141	Volt-Ammeter	II
	PA-151	Volt-Ammeter	II
	PA-161	Volt-Ammeter	II
Weston	370	Reference portable standard	I
	433	Portable, general field testing	II
	633	Hook-on (volt-ammeter)	IV
	904	Portable, general field testing	II

*Refer to "Part III - General Plant Items" for explanation of groups.

AMMETERS, RECORDING

<u>Group*</u>	<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
III	Esterline-Angus	A	Ink, strip, motor or clock, portable	II
IV	General Electric	CH-3	Ink, strip, motor or clock, portable	II
IV		CH-4	Ink, strip, motor or clock, portable, with 15 kV CT	IV
III		CH-7	Inkless, strip, motor drive, portable	IV
II		CF-1	Inkless, strip, motor drive, portable, with 15kV CT	IV
II		CF-7	Thermal, ink, circular motor or clock, portable, pole or socket mount	IV
IV	Sangamo	CCA Series	Ink, strip, motor or clock, portable	III
II	Westinghouse	44	Ink, circular, motor or or clock, portable	II
II		45	Ink, circular, motor or or clock, portable	IV

* Refer to "Part III - General Plant Items" for explanation of groups.

VOLTMETERS, INDICATING

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Multi-Amp	145	Portable, general field testing	II
Sangamo	V4S	Thermal, Min-Max pointers, socket mount	III
Westinghouse	A-141	Volt-Ammeter	II
	PC-141	Portable, general field testing	II
	PA-151	Volt-Ammeter	II
	PC-151	Portable, general field testing	II
	PA-161	Volt-Ammeter	II
	PC-161	Portable, general field testing	II
Weston	341	Reference portable standard	I
	433	Portable, general field testing	II
	904	Portable, general field testing	II

*Refer to "Part III - General Plant Items" for explanation of groups.

VOLTMETERS, RECORDING

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Esterline-Angus	A	Ink, strip, motor or clock, portable	II
General Electric	CH-3	Ink, strip, motor clock, portable, single range	II
	CH-3	Ink, strip, motor or clock, portable, expanded range	II
	CH-4	Ink, strip, motor or clock, portable, multi-range	II
	CF-1	Inkless, strip, motor drive, portable	IV
Sangamo	CCV Series	Thermal, ink, circular motor or clock, portable, pole or socket mount	III
Westinghouse	44	Ink, strip, motor or clock, portable	II
	45	Ink, circular, motor or clock, portable	IV

* Refer to "Part III - General Plant Items" for explanation of groups.

WATTMETERS, INDICATING

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Multi-Amp	155	Portable, general field testing	II
Westinghouse	PY-5	Portable, general field testing	II
Weston	432	Portable, general field testing	II
	310	Portable, standard	II
	905	Portable, general field testing	II

WATTMETERS, RECORDING

Esterline-Angus	A	Ink, strip, motor or clock, portable	II
General Electric	CF-8	1Ø watt-var, inkless strip, motor, portable	IV
	CH-3 CH-4	Ink, strip, motor or clock, portable	II
Sangamo	CCW Series	Thermal, ink, circular, motor or clock, portable, pole or socket mount	III
Westinghouse	44	Ink, strip, motor or clock, portable	II

*Refer to "Part III - General Plant Items" for explanation of groups.

June 1985